RESEARCH CENTER

FIELD
Computational Sciences for Biology, Medicine and the Environment

Activity Report 2012

Section Dissemination

Edition: 2013-04-24

ABS Project-Team

7. Dissemination

7.1. Scientific Animation

7.1.1. Conference Program Committees

– F. Cazals was member of the following PC:

- Symposium on Geometry Processing.
- Geometric Modeling and processing.
- ACM Symposium on Solid and Physical Modeling.
- IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology.
- International conference on Pattern Recognition in Bioinformatics.

7.1.2. Appointments

– F. Cazals is member of the scientific committee of *GDR Bio-informatique-Moléculaire*, in charge of activities related to computational structural biology.

7.1.3. Book

Having initiated and coordinated the Master of Science in Computational Biology, see http://cbb.unice.fr, F. Cazals and P. Kornprobst edited a book entitled *Modeling in Computational Biology and Medicine: A Multidisciplinary Endeavor* [17], with one chapter per class taught in this program.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

(Master) Ecole Centrale Paris, France, 3rd year of the engineering curriculum in applied mathematics. Course on *Geometric and topological modeling with applications in biophysics*, taught by F. Cazals (24h).

(Master) University of Nice Sophia Antipolis, France, Master of Science in Computational Biology (http://cbb.unice.fr). Course on *Algorithmic problems in computational structural biology*, taught by F. Cazals (24h).

(Winter school Algorithms in Structural Bio-informatics) Together with J. Cortès from LAAS / CNRS (Toulouse), F. Cazals is organizing the winter school *Algorithms in Structural Bio-informatics* [4]. The goal of this winter school is to present state-of-the-art concepts, algorithms and software tools meant to analyze and predict macro-molecular assemblies, with a focus on methodological developments. We have accepted 25 students from all over the world.

7.2.2. Supervision

PhD & HdR:

(PhD thesis, ongoing) C. Roth, *Modeling the flexibility of macro-molecules: theory and applications*, University of Nice Sophia Antipolis. Advisor: F. Cazals.

(PhD thesis, ongoing) A. Lheritier, *Scoring and discriminating in high-dimensional spaces: a geometric based approach of statistical tests*, University of Nice Sophia Antipolis. Advisor: F. Cazals.

(PhD thesis, ongoing) D. Agarwal, *Towards nano-molecular design: advanced algorithms for modeling large protein assemblies*, University of Nice Sophia Antipolis. Advisor: F. Cazals.

[4] http://www-sop.inria.fr/manifestations/algoSB/

AMIB Project-Team

7. Dissemination

7.1. Scientific Animation

7.1.1. French Community

Participants: Patrick Amar, Jérôme Azé, Julie Bernauer, Sarah Cohen-Boulakia, Alain Denise, Christine Froidevaux, Sabine Peres, Yann Ponty, Mireille Régnier, Jean-Marc Steyaert.

The whole team is involved in GDR-BIM (Molecular Bioinformatics, http://www.gdr-bim.u-psud.fr/). J. Azé is the webmaster. Alain Denise is a member of the Scientific Committee. Ch. Froidevaux and S. Cohen-Boulakia participate to the subdomain *Knowledge Representation, Ontologies, Data Integration and Grids*.

A. Denise, Y. Ponty and M. Régnier participate into the subdomain Sequence Analysis and to COMATEGE subgroup of GDR- IM (Informatique Mathématique, http://www.gdr-im.fr/)

A. Denise, Y. Ponty, J.-M. Steyaert, and M. Régnier are involved in the ALEA working group (http://igm.univ-mlv.fr/~nicaud/webalea/ of the GDR-IM (Informatique Mathématique, http://www.gdr-im.fr/).

7.1.2. Seminars and visits

7.1.2.1. Amib seminars

We received in our weekly seminar: A. Thévenin (Bielefeld University), A. Sim (Bioinformatics Institute, A*STAR Singapore), J. Andreani-Feuillet (CEA, Saclay), R. Fonseca (University of Copenhagen), P. Clote (Boston College), J. Waldispuhl (McGill University), Robert Giegerich (Bielefeld Univeristy), J-C. Almeida (Lisbonne), Y. Okamoto (Nagoya University), N. Malod-Dognin (INRIA Sophia-Antipolis), V. Boeva (Institut Curie, Paris), L. Pereyaslavets (Stanford University), X. Huang (HKUST).

7.1.2.2. Other seminars

P. Amar ran a workshop at the *Modelling Complex Biological Systems in the Context of Genomics.* Spring school at Évry. He has been invited to give a talk at the Ecole de Printemps 2012 de la Société Francophone de Biologie Théorique on *Comparative study of some methods for simulation of biochemical reactions*.

J. Azé has been invited to present his work in the field of Protein-Protein Interaction and Docking to the Dalembert's seminars of Paris-Sud.

J. Bernauer gave a talk at the Inria@SiliconValley Workshop BIS2012 in May in Paris. She gave an invited talk at the Computational Structural Biology workshop at HKUST in August (Hong-Kong) at SSRL (Stanford Synchrotron Radiation Lightsource) in November (SLAC, Stanford, USA).

S. Cohen-Boulakia has been invited to participate to the Dagsthul seminar on *Principles on Provenance*. She has been invited to present the current challenges and opportunities in the field of *Data Integration in the Life Sciences* at *Internet Memory*.

A. Denise gave an invited keynote on combinatorics and random generation in the context of bioinformatics at the GASCom 2012 conference (Bordeaux).

S. Peres has been invited to give a talk to the Dagsthul seminar 12462 on *Symbolic Methods for Chemical Reaction Networks*. She gave a talk to *Modelling Complex Biological Systems in the Context of Genomics.* at Évry and to *The 4th* JFLI-LRI-NII *Workshop on Consequence Finding and Satisfiability Testing in Distributed Environments and Systems Biology* at Orsay.

Y. Ponty gave an invited keynote on RNA visualization at the EMBL-hosted conference *VIZBI'12* (Heidelberg, Germany), three invited talks at the *Benasque RNA workshop* (Spain), and an invited talk at the SeqBio'12 colloquium (LIGM, Marne La Vallée, France).

M. Régnier gave an invited talk at the Conference “en l’honneur d’ Alain Guenoche”, CIRM, Marseille, France.

7.1.2.3. International exchanges

J.Bernauer and M.Régnier visited H. van den Bedem at SSRL (SLAC) and M. Levitt at Stanford University (USA). J.Bernauer visited the Huang group at HKUST (Hong-Kong) and the Bujnicki lab at IIMCB (Warsaw, Poland).

M. Régnier and D. Iakovishina visited IoGene (Moscow). M. Régnier visited USC (M. Waterman) and UC Berkeley (P. Novichkov and E. Purdom).

S. Cohen-Boulakia visited the Information Management Group at the University of Manchester (C. Goble and N. Paton) to initiate collaboration on Data Integration for the Life Sciences (including provenance in scientific workflows).

Katsumi Inoue’s group visited AMIB group during the 4th JFLI-LRI-NII Workshop on "Consequence Finding and Satisfiability Testing in Distributed Environments and Systems Biology" (19th - 20th, November 2012).

7.1.3. Program Committee

P. Amar was chairman of the organising committee, and a member of the scientific committee as well, for the conference "Modelling Complex Biological Systems in the context of genomics", Evry, May 2012. (http://epigenomique.free.fr/en).

J. Azé and C. Froidevaux served as PC members for the conference EGC 2012 (Extraction et la Gestion des Connaissances, Bordeaux).

S. Cohen-Boulakia served as PC member for: ICDE 2012 22 (27th I 2012 222tnf. on Data Engineering, Washington, USA), SWEET 2012 (Int. workshop on Scalable Workflow Enactment Engines and Technologies, Scottsdale, USA) and BDA 2012 (Bases de Données Avancées, Clermont-Ferrand).

S. Cohen-Boulakia and C. Froidevaux served as PC member for DILS 2012 (Int. workshop on Data Integration in the Life Sciences, University of Maryland, USA).

A. Denise is a member of the editorial board of Technique et Sciences Informatiques.

F. D’Alche-Buc, C. Froidevaux, and Y. Ponty served as PC members for JOBIM 2012 (Journées Ouvertes en Biologie, Informatique et Mathématiques, Rennes).

Ch. Froidevaux served as member of the program committee of JOBIM’12 bioinformatics conference.
She was PC member of the following international workshops and conferences: CMBS 2012 2012 (25th International Symposium on Computer-Based Medical Systems, Rome, Italy), NETTAB’2012 (12th International Workshop on Network Tools and Applications in Biology, on Integrated Bio-Search, Como, Italy) ICCS 2012 (Workshop on Biomedical and Bioinformatics Challenges to Computer Science, Omaha, USA) and ISMB 2012 (Applied Bioinformatics area, Long Beach, USA).

J. Bernauer, Y. Ponty and M. Régnier served as PC members for WRSBS 2012 (1st International Workshop on Robustness and Stability of Biological Systems and Computational Solutions, Orlando, USA).

Y. Ponty, M. Régnier, and J.-M. Steyaert served as PC members for BICOB 2012 (4th International Conference on Bioinformatics and Computational Biology, Las Vegas, USA).

S. Peres served as PC member for ECCB 2012 (European Conference on Computational Biology 2012, Basel, Switzerland).

7.1.4. Research administration

Y. Ponty is an elected member of the *Comité national du CNRS* (6th section – Foundations of Computer Science and CID 51 –Bioinformatics).

J. Bernauer is member of the IDEX Paris - Saclay Groupe de travail Sciences du Vivant.

A. Denise was a member of the *Comité national du CNRS* (7th section – and CID 43 –Bioinformatics) until September 2012. He is an expert for the *Direction Géenérale de la Recherche et l'Innovation* (DGRI) of the Research Ministry. He is a member of the Scientific Commission of the Inria-Saclay reserach center.

Ch. Froidevaux has been head of the Computer Science Department at the University Paris Sud until the end of January 2012 and is head of the Bioinfo group at LRI.

M. Régnier is a deputy-member of DIGITEO program committee.

J.-M.Steyaert is a member of the Board of Administrators of Polytechnique.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

The Master of Bioinformatics and Biostatistics, which is a joint master between University Paris-Sud and Ecole Polytechnique http://www.bibs.u-psud.fr, is co-headed by members of the group.
J.-M. Steyaert organizes BIBS (M1 and M2) at Ecole Polytechnique. A. Denise has co-headed the Master (M1 and M2) at the University Paris Sud until end August. C. Froidevaux is co-heading it at the University since September 2012.
Most team members are teaching in this master.

Master BIBS: J. Bernauer, Informatique théorique et Programmation Python, 20h, M2, Université Paris-Sud, France

Cycle Ingénieur Polytechnicien: J. Bernauer, Modal Bioinformatique, 18h, 2ème année, École Polytechnique, France

Cycle Ingénieur Polytechnicien: J. Bernauer, PSC, encadrement, 2ème année, Ecole Polytechnique, France

Cycle Ingénieur Agro Paris Tech: J. Bernauer, Module AAB, cours invité, 3ème année, Agro Paris Tech, France

Master BIM: Y. Ponty, Modélisation et bioinformatique de l'ARN, 8h de cours, M2, Université Paris-Sud, France

Master BIBS: Y. Ponty, M. Regnier, J.-M. Steyaert, Combinatoire, Algorithmes, Séquences et Modélisation (CASM), 32h, M2, Université Paris-Sud, France

Doctorat : M. Régnier, Combinatorics on genome, 20h, El-Farabi University, Kazakhstan

Master : J.-M. Steyaert, X cycle ingénieur INF582- Datamining, 35h, M1, Ecole Polytechnique, France

Licence : J.-M. Steyaert, X cycle ingénieur Modal-BioInformatique, 45h, L3, Ecole Polytechnique, France

Master : J.-M. Steyaert, BIBS Algorithmique avancée et optimisation, 25h, M2, X-Orsay, M2, Ecole Polytechnique, France

Data Bases, 48h, M1 BIBS (Bioinformatics and BioStatistics), Paris-Sud University, France (C. Froidevaux)

Advanced Algorithmics, 48h, M1 BIBS (Bioinformatics and BioStatistics), Paris-Sud University, France (C. Froidevaux)

Integration and Analysis of heterogeneous data from the Web, 24h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (J. Azé, S. Cohen Boulakia, C. Froidevaux)

Advanced Data Bases and Data Mining, 42h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (S. Cohen Boulakia, C. Froidevaux).

Initiation to Research, 6h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University, France (C. Froidevaux)

Software Engineering for Bioinformatics, 48h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (P. Amar)

Modelling and Simulation of Biological Processes, 24h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (P. Amar)

Biological Networks and Systems Biology, 9h, M1 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (P. Amar)

RNAomics and RNA Bioinformatics, 12h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (A.Denise)

Theoretical Computer Science, 30h, M2 BIBS (Bioinformatics and BioStatistics), Paris-Sud University/École Polytechnique, France (A.Denise)

7.2.2. Supervision

HdR : Jérôme Azé, Prédiction d'Interactions et Amarrage Protéine-Protéine par combinaison de classifieurs, Paris-Sud University, 16/11/2012

PhD : Feng Lou, Algorithms for studying RNA secondary structures and sequence alignments, Univ. Paris-Sud, 30/01/2012, P. Clote (Boston) and A. Denise.

PhD : Philippe Rinaudo, Algorithmics of RNA structure-sequence alignment: a general and parameterized approach, Univ. Paris-Sud, 05/12/2012, D. Barth (Univ. Versailles) and A. Denise.

PhD in progress : Bryan Brancotte, Ranking biological and biomedical data: algorithms and applications, Université Paris Sud, 01/10/2012, S. Cohen-Boulakia and A. Denise

PhD in progress : Jiuqiang Chen, Mining and Integrating heterogeneous data in e-science environments, 10/09/2011, Université Paris Sud, S. Cohen-Boulakia and C. Froidevaux

PhD in progress: Adrien Guilhot-Gaudeffroy, Modelling and scoring of protein-RNA complexes, 01/10/2011, J. Azé, J. Bernauer, C. Froidevaux

PhD in progress: Daria Iakovishina, A Combinatorial Approach to Assembly Algorithms, 01/11/2011, M. Régnier

PhD in progress : Cécile Pereira, Bioinformatics approaches for a comparative study of metabolic networks and their evolution, 01/10/2011, A. Denise and O. Lespinet (IGM, Univ. Paris-Sud)

PhD in progress : Antoine Soulé, Evolutionary study of RNA-RNA interactions in yeast, 01/09/2012, J.-M. Steyaert, Y. Ponty, and J. Waldispühl (University McGill, Canada)

PhD in progress : Bo Yang, Bioinformatics approaches for studying the relations between RNA structure and pre-messenger RNA splicing, 01/10/2011, A. Denise and Fu Xiangdong (Wuhan University, China)

PhD in progress : Cong Zeng, Identification of structural motifs in messenger RNAs, 01/10/2011, A. Denise

PhD in progress : Mélanie Boudard, Game theory and stochastic learning for predicting the three-dimensional structure of large RNA molecules , 15/10/2012, J. Cohen (CNRS, Univ. Versailles) and A. Denise.

7.2.3. Juries

A. Denise served as referee and jury member for Sylvain Sené's HDR defence (Univ. Evry, November 2012), Amine Ghozlane's PhD defence (Univ. Bordeaux I, December 2012) and Romain Pogorelcnik's PhD Defence (Univ. Blaise Pascal - Clermont II, December 2012). He served as the head of the jury member in Leandro Montero's PhD defence (Univ. Paris-Sud, December 2012). He served as a jury member in the hiring committee for a *Maître de Conférence sur chaire CNRS* position at Ecole Centrale de Nantes.

C. Froidevaux was a referee for Johan Estellon's PhD defence(Univ. Grenoble). She served as a member of the *Comité de thèse* of Pauline Gloaguen (INRA Tours, Feb 2012) and as a jury member for the defence of her PhD (Univ. Tours, Dec 2012). She served as the head of the jury in Konstantinos Karanasos' PhD defence (Paris Sud, July 2012). She was member of the *HDR* de Jérôme Azé (Univ. Paris-Sud).

Ch. Froidevaux took part as an external jury member in the hiring committee of an Assistant Professor position at IGM (Univ. Paris Sud, Orsay). She is member of the *Commission Consultative de Spécialistes* (CCSU, 27th section) of the University Paris Sud.

M. Régnier served as a jury member in Jérémie Bourdon's HDR defence (Nantes University). She was a member of the hiring committee for *Maître de Conférence* position at Bordeaux University (LaBRI).

S. Peres served as a jury member in the PhD defense committee of Chamseddine KIFAGI at Sfax University (Tunisia).

Y. Ponty served as a jury member in the hiring committee for a *Maître de Conférence* position at Université de Versailles St Quentin. He served as a jury member in the PhD defense committee of Azadeh Saffarian at Université de Lille 1 (LIFL/Inria Lille).

7.3. Popularization

AMIB animated the INRIA booth, at the yearly "Nuit des Chercheurs" http://events.polytechnique.fr/accueil/la-nuit-des-chercheurs/la-nuit-des-chercheurs-43774.kjsp in September at Ecole Polytechnique. The topic was to illustrate the principles underlying RNA folding algorithms through playing combinatorial games.

Y. Ponty gave a presentation at *Unithé ou Café*, the monthly *popular science* event of sc Inria Saclay, on RNA folding using dynamic programming. He was interviewed by the *Interstices* web site on RNA folding algorithms, leading to a 12 minutes-long podcast. Y. Ponty was invited to give a tutorial on RNA visualization at the EMBL (Heidelberg, Germany)-hosted conference VIZBI'12.

S. Cohen-Boulakia was invited to give a short tutorial on *Data Integration in the Life Sciences* at the national thematic school *Masses de données distribuées* (Summer School).

BAMBOO Project-Team

8. Dissemination

8.1. Scientific Animation

Hubert Charles is director of studies of the "Bioinformatique et Modélisation (BIM)" track at the INSA-Lyon. He is co-director of the Biosciences Department of the INSA-Lyon, and co-director of the Doctoral School E2M2.

Marie-France Sagot is a member of the Scientific Advisory Board ("Conseil Scientifique (COS)" for the Inria Grenoble Rhône-Alpes Research Center. She is since 2012 member of the Scientific Board of the French Society of Computer Science (SFI). She was co-chair for one area track of the 20th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB) 2012, and co-chair for the RECOMB Satellite Workshop Comparative Genomics (RECOMB-CG) 2012. She is Editor-in-Chief of *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, and Associate Editor of *BMC Bioinformatics*, *Algorithms for Molecular Biology*, *Journal of Discrete Algorithms*, and *Lecture Notes in BioInformatics*. She is member of the Steering Committee for the European Conference on Computational Biology (ECCB), for the International Symposium on Bioinformatics Research and Applications (ISBRA), and for the Latin American Theoretical Informatics Symposium (LATIN). She was member of the Program Committee for BSB, ISMB, PACBB, PSC, WABI. She is a member of the scientific council of the Labex EcoFect.

Fabrice Vavre is director of the GDR 2153(CNRS) "Interactions multipartenaires dans les populations et les communautés d'insectes". He is also member of the management committee and responsible of a working group in the COST Action FA0701 "Arthropod Symbiosis: from fundamental studies to pest and disease management" which ended in June 2012. He was president of a selection committee for a teaching position at the University Lyon 1 in Microbial Genetics. He was elected member of the Section 29 of the Comité National de la Recherche Scientifique. He is a member of the scientific council of the Labex EcoFect.

Alain Viari is since 2012 Deputy Scientific Director at Inria in charge of ICST for Life and Environmental Sciences. He represents Inria in several national instances related to Life Sciences and Health and is member of several scientific advisory boards (IMMI (Institut de Microbiologie et Maladies Infectieuses / Aviesan); IRT (Institut de Recherche Technologique) BioAster). He is the French coordinator of the Bioinformatics working group of the France-US joint committee on Science and Technology. He is a member of the Scientific Advisory Board ("Conseil Scientifique (COS)" for the Inria Grenoble Rhône-Alpes Research Center.

Cristina Vieira is director of the GDRE "Comparative genomics" since the GDRE was renewed in 2010.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Three members of the BAMBOO project are professors or associate professors at the University Claude Bernard in Lyon and at the INSA Lyon: Hubert Charles, Vincent Lacroix, and Cristina Vieira. They therefore have a full teaching service (at least 192 hours) except for Cristina Vieira who became since 2010 a Junior Member of the Institut Universitaire de France.

Various members of the EPI have developed over the years courses in biometry, bioinformatics and evolutionary biology at all levels of the University as well as at the "École Normale Supérieure" (ENS) of Lyon and the INSA ("Institut National de Sciences Appliquées"). Two members of the EPI have also in the past participated in, or sometimes organised courses or teaching modules at the international level: creation and support of a Master's course in Ho-Chi-Minh, Vietnam, and creation and direction of a PhD Program in Computational Biology in Lisbon, Portugal (http://bc.igc.gulbenkian.pt/pdbc/).

8.2.2. Supervision

The following are the PhDs defended in BAMBOO in 2012.

PhD: Patricia Simões, University of Lyon 1, March 14, supervisors S. Charlat and M.-F. Sagot

PhD: Paulo Vieira Milreu, University of Lyon 1, December 19, supervisors C. Gautier, V. Lacroix and M.-F. Sagot

8.2.3. Juries

M.-F. Sagot: Reviewer of the HDR of Guillaume Blin (University of Paris-Est) and of the PhDs of Stéphane Prin (Muséum National d'Histoire Naturelle) and Adam Smith (University of Évry).

F. Vavre: Member of the committee for the HDR of Franck Prugnolle (University of Montpellier), and for the PhDs of Barbara Reumer (University of Leiden), Winka Le Clec'h (University of Poitiers), Johan Decelle (University of Paris 6) and Flore Zele (University of Montpellier).

A. Viari: Member of the committee for the PhDs of Adam Smith (University of Évry) Philippe Bordron (University of Nantes).

8.3. Popularization

Fabrice Vavre gave two talks, respectively entitled "Quand les parasites utilisent nos gènes, et réciproquement" and "Sommes-nous manipulés par nos gènes", at the Université Ouverte. He also gave a talk entitled "Diversité des interactions hôtes-microorganismes et nouvelles méthodes de lute contre les maladies infectieuses" at the General Meeting of the Biotechnologies Professors.

BEAGLE Team

8. Dissemination

8.1. Scientific Animation

- G Beslon is a nomiated member at the CoNRS, section 06
- G Beslon is chair of the Scientific Committee of the Rhône-Alpes Institute for Complex Systems (IXXI).
- C Knibbe was vice-chair of the Scientific Committee of the Rhône-Alpes Institute for Complex Systems (IXXI).
- C Knibbe was a member of the Program Committee of ECCB 2012 (11th European Conference on Computational Biology)
- C Knibbe was a member of the Program Committee of the annual workshop of the Faculté des Sciences et Technologies of Université Lyon 1.
- C Knibbe participated in the evaluation of project proposals of the Blanc SVSE 7 2012 ANR program (Biodiversité, évolution, écologie et agronomie).
- H Berry is a Member of the Inria Evaluation Committee (Commission d'Evaluation) (2011-2015).
- H Berry is a Member of the Inria hiring committee 2012 (selection for associate research professor positions, jury d'admissibilite et d'admission).
- H Berry is a Member of the SPECIF committee (best French PhD in Computer Science) (2011-2012)
- H Berry is a Member of the Evaluation committee for the 2012 "Systems Biology" call for funding of the "ITMO Cancer".
- H Berry is a Reviewer for the 2012 Call for funding of the FNRS, Belgium.
- E Tannier is co-chairing the organizing committee of Recomb satellite workshop on comparative genomics, Lyon 2013
- E Tannier is co-chairing the organizing committee of "Models and Algorithms for Genome Evolution", Montreal 2013
- E Tannier was a member of the Program Committee of ECCB 2012 (11th European Conference on Computational Biology)
- E Tannier was a member of the Program Committee of Recomb satellite workshop on comparative genomics, Rio 2012
- E Tannier is a Reviewer for the 2012 Call for funding of the Fonds Québécois pour la recherche

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Several of us are half time teachers, and all their teaching record is not necessarily reported here. Researchers, post-doc and students teaching modules are detailed.

Licence and Master: Guillaume Beslon, computer achitecture and bioinspired intellignece at the computer science department of INSA Lyon, 192h eq TD

Licence: Carole Knibbe, "Algorithmique et programmation procédurale", 67 h eqTD, niveau L2 (+ responsabilité de l'UE), Université C. Bernard Lyon 1, France.

Licence: Carole Knibbe, "Encadrement de stage en informatique ", 3 h eqTD, niveau L3, Université C. Bernard Lyon 1, France.

Master: Carole Knibbe, "Intelligence artificielle bio-inspirée ", 14 h eqTD, niveau M2R, Université C. Bernard Lyon 1, France.

Master: Carole Knibbe, "Méthodologie scientifique et préparation à la recherche ", 24 h eqTD (+ responsabilité de l'UE), niveau M2R, Université C. Bernard Lyon 1, France.

Master: Carole Knibbe, "Modélisation et simulation en biologie et médecine ", 9 h eqTD (+ responsabilité de l'UE), niveau M2R, Université C. Bernard Lyon 1, France.

Master: Christophe Rigotti, Data Mining, 25 H eqTD, M1, INSA Lyon

Licence: Christophe Rigotti, Imperative Programming, 44 H eqTD, L1, INSA Lyon

Licence: Christophe Rigotti, Object-Oriented Programming 42 H eqTD, L2, INSA Lyon

Licence: Christophe Rigotti, Computer Simulation 71 H eqTD, L2, INSA Lyon

Licence: Bérénice Batut, Computer Science, 64h eq TD, INSA Lyon

Licence: Jules Lalouette, Computer Science, 64h eq TD, INSA Lyon

Licence : Stephan Fischer, "Mathématiques", 74 h eqTD, prépa intégrée première année, INSA de Lyon, France.

Licence: David P. Parsons, Algorithmique, Programmation Oriente´e Objet - C++, 19HeqTD, niveau L3, INSA Lyon, France

Licence: David P. Parsons, Approche Logique de l'Intelligence Artificielle, 57HeqTD, niveau L3, INSA Lyon, France

Licence: David P. Parsons, De´veloppement d'Applications pour les Syste`mes d'Information, 66HeqTD, niveau L3, INSA Lyon, France

Licence: David P. Parsons, Syste`mes d'Exploitation, 38HeqTD, niveau L3, INSA Lyon, France

Master: Eric Tannier, Discrete Mathematics, 8h, M1 UCBL and M1, INSA Lyon

Master: Eric Tannier, Mathématiques et Informatique pour le génome, 26h, M1 INSA Lyon

Master: Eric Tannier, Bioinformatique, 24h, M1 ISBM Monastir, Tunisie

Master: Eric Tannier, Evolution des systèmes, 2h, M2, Université de Montpellier 2

Licence: Eric Tannier, Histoire des théories de l'évolution, 2h, L3, ENS Lyon

8.2.2. Supervision

PhD & HdR :

PhD: Anne-Sophie Coquel, Dynamique de l'agrégation protéique chez la bactérie Escherichia coli, soutenue le 16 Novembre 2012, co-supervisée par H. Berry (Beagle) and A. Lindner (INSERM U1001, Cochin Medical School, Paris), INSA Lyon, ED 512 Informatique

PhD: Pierre-Nicolas Mougel. Title: Finding homogenous collections of dense subgraphs using constraint-based data mining approaches. Application to the analysis of scientific collaboration networks and protein interaction graphs. INSA Lyon, September 14, 2012. Supervised by C. Rigotti.

PhD: Bertrand Caré. Title: Modèles individu-centrés de l'impact fonctionnel des hétérogénéités de diffusion et de distribution spatiale des protéines de signalisation cellulaire. INSA Lyon, November 26, 2012. Co-supervised by H. Soula and C. Rigotti.

PhD : David P. Parsons, "Sélection Indirecte en Évolution Darwinienne, Mécanismes et Implications", INSA de Lyon, December 8, 2011, co-supervised by Guillaume Beslon and Carole Knibbe

PhD in progress : Stephan Fischer, "Modélisation mathématique des phénomènes de s sélection indirecte dans l'évolution darwinienne", started in sept. 2010, co-supervised by Guillaume Beslon and Carole Knibbe, with the help of Samuel Bernard (Inria Dracula team)

PhD in progress : Bérénice Batut, "Etude de l'évolution réductive des génomes bactériens par analyses bioinformatiques et expériences d'évolution in silico", co-supervised by Guillaume Beslon and Gabriel Marais (LBBE), with the help of Carole Knibbe

PhD in progress: Jules Lallouette, Transport dans les réseaux complexes : le cas des réseaux mixtes neurones/cellules gliales, September 2011, supervised by Hugues Berry

PhD in progress: Magali Semeria, Biologie évolutive des systèmes, encadrée par E. Tannier et L. Gueguen (LBBE)

PhD in progress: Gael Kaneko, "modeling of the effect of chromatin dynamic on the stochasticity of gene expression", April 2009. Supervisors: Guillaume Beslon and Olivier Gandrillon (CGPhyMC, UMR CNRS 5534).

8.2.3. Juries

- G Beslon participated to the PhD jury of Linda Dib (Université Pierre et Marie Curie), "Détection des mutations simultanées dans les séquences protéiques non-divergentes". March 26 2012.
- G Beslon participated to the PhD jury of Hervé Le Nagard (Université Pierre et Marie Curie), Etude de l'émergence et de l'impact de la complexité phénotypique au travers de modèles théoriques et computationnels. December 15 2011
- E Tannier is invited to the HDR jury of N Thierry-Mieg, "smart pooling and interactomes", Grenoble, 2013
- E Tannier is invited to the Ph-D jury of G. Drillon, 2013 (reviewer)
- E Tannier participated to the Ph-D jury of C. Berthelot, ENS Paris, 2012
- H Berry participated to the Ph-D jury of Mathieu Lefort, "Apprentissage spatial de correlations multimodales par des mecanismes d'inspiration corticale", Nancy, July 04, 2012 (reviewer)
- H Berry participated to the Ph-D jury of Guillaume Core, "Heterogeneite phenotypique dans les populations d'origine clonale: origine et consequences", Paris, June 27, 2012 (reviewer)
- H Berry participated to the Ph-D jury of Hana Belmabrouk, "Modelisation et simulation du complexe macroglomerulaire des papillons de nuit", Nancy, May 15, 2012 (reviewer)

8.2.4. International Invited talks

- H Berry, "The remarkable effect of topology on calcium wave propagation in astrocyte networks", Workshop on the organization of excitable dynamics in hierarchical neural networks, 23-25 mai 2012, Bremen, Germany
- G Beslon, "Experimental approaches in ecology and evolution within yeast", EMBL Heidelberg, nov 2012

8.3. Popularization

- G Beslon participated to the "nuit des chercheurs" event in Villeurbanne on September 28, 2012 for the animation of a stand named "biologie artificielle - biologie synthetique".
- E Tannier teaches at the Université Populaire de Lyon, on science and politics, March 2012
- E Tannier participated to a scientific event "Les fourneaux de l'invention" gathering physicists, sociologists, biologists in Lyon, April 2012

BONSAI Project-Team

8. Dissemination

8.1. Scientific Animation

+ The team actively participates in the national GDR *Bioinformatique moléculaire*. H. Touzet has been a member of the executive committee since 2007. In this context, we hosted the national annual workshop, Seqbio, devoted to sequence analysis and bioinformatics (2 days, 80 participants, december 2011).
+ We organize a regular pluridisciplinary seminar on bioinformatics, whose audience is composed of researchers in biology and bioinformatics. In the last twelve months, we proposed three events: *manycores programming in biology* (2 days, 35 participants), *phylogeny* (2 days, 38 participants), *Analysis of NGS data* (1 day, 110 participants).
+ We organized the annual meeting of the GTGC workgroup (Comparative Genomics Working Group) (1.5 days, 40 participants, december 2012).

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Our research work finds also its expression in a strong commitment in pedagogical activities at the University Lille 1. For several years, members of the project have been playing a leading role in the development and the promotion of bioinformatics (more than 400 teaching hours per year). We are involved in several graduate diplomas (research master degree) in computer science and biology (*master biologie-santé, master génomique et protéomique, master biologie-biotechnologie*) in an Engineering School (Polytech'Lille), as well as in permanent education (for researchers, engineers and technicians).

M. Pupin, M. Salson, *Introduction to programming (OCaml)*, 96h, L1 (licence "Computer science", univ. Lille 1)

M. Salson, *Coding and information theory*, 36h, L2 (licence "Computer science", univ. Lille 1)

J.-S. Varré *Programming with Caml*, 55h, L2 (licence "Sciences for Engineers", univ. Lille 1)

J.-S. Varré *Algorithms and Data structures*, 50h, L2 (licence "Computer science", univ. Lille 1)

L. Noé, *Algorithms (Ada)*, 58h, L3 (licence "Computer science", univ. Lille 1)

L. Noé, *Networks*, 36h, L3 (licence "Computer science", univ. Lille 1)

L. Noé, *System*, 36h, L3 (licence "Computer science", univ. Lille 1)

M. Pupin, *Databases*, 36h, L3 (licence "Computer science", univ. Lille 1)

M. Pupin, *Professional project*, 18h, L3 (licence "Computer science", univ. Lille 1)

M. Salson, *C programming*, 42h, L3 (licence "Computer science", univ. Lille 1)

S. Janot, *Introduction to programming*, 50h, first year of engineering school (L3) (Polytech'Lille, univ. Lille1)

S. Janot, *Introduction to databases*, 30h, first year of engineering school (L3) (Polytech'Lille, univ. Lille1)

A. Ouangraoua *Programming with MATLAB*, 36h, L1 (licence "Mechanical Engineering", École de Technologie Supérieure de Montréal)

L. Noé, *Bioinformatics*, 54h, M1 (master "Génomique Protéomique", univ. Lille 1)

L. Noé, *Individual project*, organiser, M1 (master "Computer science", univ. Lille 1)

M. Pupin, *Introduction to programming (JAVA)*, 30h, M1 (master "Mathématiques et finance", univ. Lille 1)

M. Salson, J.-S. Varré, *Bioinformatics*, 100h, M1 (master "Biology and Biotechnologies", univ. Lille 1)

S. Blanquart, *Algorithms and applications in bioinformatics*, 24h, M1 (master "Computer Science", univ. Lille 1)

S. Janot, *Databases*, 12h, second year of engineering school (M1) (Polytech'Lille, univ. Lille1)

S. Janot, *Introduction to artificial intelligence*, 25h, second year of engineering school (M1) (Polytech'Lille, univ. Lille1)

M. Pupin, J.-S. Varré *Computational biology*, 30h, M2 (master "Modèles complexes, algorithmes et données", univ. Lille 1)

M. Pupin, *Practical bioinformatics*, 35h, M2 (master "Génomique Protéomique", univ. Lille 1)

S. Blanquart, *Methods in phylogenetics*, 4h, M2 (master "Ecology Environment", univ. Lille 1)

M. Giraud, L. Noé, M. Pupin, *High-performance bioinformatics*, 28h, M2 (master "Calcul Scientifique", univ. Lille 1)

M. Pupin, J.-S. Varré, *ISN - Computer science for secondary school*, 30h, second-level teachers.

8.2.2. Supervision

PhD : *Tuan Tu Tran*, Bioinformatics Sequence Comparisons on Manycore Processors, Univ. Lille 1, defense scheduled on 21 December 2012, co-directed by J.-S. Varré and M. Giraud

PhD : *Aurélien Vanvlassenbroeck*, Experimental and *in silico* study of the nonribosomal synthesis done by fluorescent *Pseudomonas*, Université Lille 1, 17 July 2012, co-directed by M. Pupin, V. Leclère (ProBioGEM lab) and P. Jacques (ProBioGEM lab)

PhD in progress : *Antoine Thomas*, Algorithms for genome rearrangement with duplications, Université Lille 1, co-directed by J-S. Varré and A. Ouangraoua.

PhD in progress : *Evguenia Kopylova*, New algorithmic and bioinformatic approaches for the analysis of data from next-generation sequencing, Université Lille 1, co-directed by H. Touzet and L. Noé.

PhD in progress : *Christophe Vroland*, microRNA repertoire and target evolution: developing efficient indexing techniques and comparison between close plant species, Université Lille 1, co-directed by H. Touzet, M. Salson from BONSAI and V. Castric ("Genetics and evolution in plants" laboratory).

8.2.3. Juries

- Member of the thesis committee of W. Abdelwahed (Univ. Lille 1, M. Pupin) and S. Benabderrahmane (Univ. Nancy 1, M. Pupin), Ph. Bordron, (Univ. Nantes, J-S. Varré, L. Noé), Benoit Groz (Univ. Lille 1, H. Touzet), Tarek El Falah (Univ. Rouen, J.-S. Varré)
- Member of the habilitation committee of J. Bourdon (Univ. Nantes, H. Touzet)

8.2.4. Administrative activities

- National representative (*chargée de mission*) for the Institute for Computer Sciences (INS2I) in CNRS [3]. She is more specifically in charge of relationships between the Institute and life sciences (H. Touzet)
- Member of the Inria evalution commitee (M. Giraud)
- Member of the Inria local committee for scientific grants (H. Touzet)
- Scientific secretary of the Gilles Kahn PhD award commitee (M. Giraud)

[3] CNRS: National Center for Scientific Research

- Member of ITMO Genetics, Genomics and Bioinformatics of AVIESAN (H. Touzet)
- Member of CSS MBIA (mathematics, bioinformatics and artificial intelligence) at INRA (H. Touzet)
- Head of PPF bioinformatics – University Lille 1 (H. Touzet)
- Head of Bilille, Lille bioinformatics platform (M. Pupin)
- Head of ReNaBi-NE (pôle Nord-Est du Réseaux National de Bioinformatique), a cluster of 4 bioinformatics platforms (M. Pupin)
- Member of UFR IEEA council (M. Pupin)
- Head of the GIS department (Statistics and Computer Sciences) of Polytech'Lille (S. Janot)
- Member of the LIFL Laboratory council (L. Noé, H. Touzet)
- Member of hiring committee (jury d'audition) of Univ. Lille 1 (M. Pupin, H. Touzet), Univ. Pierre et Marie Curie (L. Noé), ENS Bio (H. Touzet), Université Aix-Marseille (H. Touzet), Univ. Bordeaux 1 (M. Giraud)

8.3. Popularization

- We continued the activity developed on bioinformatics puzzles by our two-months exhibition in 2010 at Palais de la découverte (science museum in Paris). These "puzzles du génome" explain the basics of sequence assembly, RNA secondary structures and phylogenetic reconstruction http://www.lifl.fr/~giraud/puzzles. In 2012, we demonstrated these puzzles to more than 150 high schools pupils (J.F. Berthelot, S. Blanquart, M. Giraud, M. Salson, A. Thomas, M. Pupin).

DYLISS Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Administrative functions: scientific committees, journal boards

- Scientific Advisory Board of ITMO Genetics Genomics and Bioinformatics [J. Nicolas].
- Scientific Advisory Board of GDR BIM " Molecular Bioinformatics"[J. Nicolas].
- Member of the section 01 of the Comité National de la Recherche Scientifique [A. Siegel]
- Member of the IRISA laboratory council [F. Coste]
- Scientific Advisory Board of Biogenouest [J. Bourdon, J. Nicolas, A. Siegel].
- Steering committee of the International Inference community (ICGI) [F. Coste]
- Academic editor: Plos One [J. Bourdon]
- Recruitment committees: junior and senior research (CNRS) [A. Siegel], assistant professor (Irccyn, Univ. Nantes) [A. Siegel, D. Eveillard], professor (Lille) [A. Siegel]
- Referee: IET Systems Biology, Bioinformatics, BMC Bioinformatics, PLoS One, Annals of combinatorics, Medical & Biological Engineering & Computing, Theoretical Computer Science, Algorithmic Learning Theory '12
- Member of SCAS (Service Commun d'Action Sociale) of Univ. Rennes 1 [C. Belleannée]

8.1.2. JOBIM

JOBIM JOBIM is the scientific yearly appointment of the French-speaking bioinformatics community. The official languages of the conference are English and French. It has been organized in Rennes this year from 3 to 6 July 2012 (P. Peterlongo, C. Lemaitre and teams Genscale and Dyliss) and chaired by F. Coste and D. Tagu (Inra). Invited speakers were David B. Searls, University of Pennsylvania, Hugues Roest Crollius, Ecole Normale Supérieure, Pierre Baldi, University of California in Irvine, Ivo Hofacker, Institute for Theoretical Chemistry, Toni Gabaldon, Centre for Genomic Regulation, Martin Vingron, Max Planck Institute for Molecular Genetics and Bertil Schmidt, Johannes Gutenberg University Mainz. The program contained 33 papers (acceptance rate 50%) grouped into ten scientific sessions including sequence analysis, the study of protein interactions, and works on regulation and evolution.

[25] [Online publication]

8.1.3. Ecole Jeunes Chercheurs en Informatique-Mathématiques (GDR IM)

The GDR Informatique Mathématique has organized a young researcher seminar from 19 to 23 March in Rennes (Chair: A. Siegel. Organization M.-N. Georgeault and E. Lebret) http://ejcim2012.irisa.fr. It gathered 93 participants and proposed several courses including biological sequence linguistics (J. Nicolas and F. Coste), time modelling for dynamic systemchecking (D. Eveillard) and practical applications of discrete dynamic systems (J. Bourdon and A. Siegel).

8.1.4. Local meetings

- **IDEALG annual meeting** The IDEALG annual meeting has been organized in Irisa/Inria Rennes from 27 to 28 September 2012. Dyliss is participating to bioinformatics studies for the development of an integrated platform on seaweed omics data.
- **Seminar** A weekly seminar of bioinformatics is organized within the laboratory. Attendees are member of the symbiose team, biologists from Brittany and computer scientists from the laboratory. [web site].

8.1.5. Conference program committees

- Cap'2012 [F. Coste]
- JOBIM [F. Coste/co-head, J. Bourdon, J. Nicolas, A. Siegel]
- ICGI'12 [F. Coste]
- Numeration [A. Siegel]

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence: C. Belleannée, Langages formels, 22h, L3 informatique, Rennes1, France.

Licence: C. Belleannée, Architecture des ordinateurs, 50h, L3 informatique, Rennes1 France.

Licence: C. Belleannée, Bases de données, 21h, L3 Miage par alternance, Rennes1 France .

Licence: G. Andrieux, TIC : Technologies de l'information et de la communication, 32h, L1, Univ. Rennes 1, France.

Licence : G. Garet, Office automation, 20h, L1, Univ. Rennes 1, France.

Licence : G. Garet, Functional algorithm, 24h, L1, Univ. Rennes 1, France.

Licence : G. Garet, Programming, 22h, L3, Univ. Rennes 1, France.

Licence: V. Picard, Scheme 14h, L1, INSA Rennes, France

Licence: V. Picard, Architecture et systèmes, 24h, L3, ENS Rennes/Univ. Rennes 1, France

Licence: V. Picard, Initiation Unix, 2h, L3, ENS Rennes, France

Licence: S. Prigent, learning PHP/SQL, 12h, L3 (3ème année ingénieur), Ensai, Rennes, France

Licence: S. Prigent, Database, 42h, L1, Ensai, Rennes, France

Licence: S. Prigent, An introduction to R, 9h, L1, Ensai, Rennes, France

Master: V. Picard, Préparation à l'agrégation de mathématiques option D: épreuve de modélisation, 12h, L2, ENS Rennes/Univ. Rennes 1, France

Master: C. Belleannée, Préférences Logique et contraintes, 32h, M1 informatique, Rennes1 France

Master: C. Belleannée, Architecture matérielle et interface au système, 28h, M2 informatique, Rennes1 France

Master: F. Coste, Apprentissage Supervisé, 15h, M2 Informatique, Univ. Rennes 1, France

Master: F. Coste, Données Séquentielles Symboliques, 10h, M2 Informatique, Univ. Rennes 1, France

Doctorat : J. Bourdon, Applications de systèmes dynamiques discrets, 2h, Ecole Jeunes Chercheurs en Informatique Mathématique, Rennes, France

Doctorat : J. Bourdon, Réseaux biologiques semi-quantitatifs : dynamique et propriétés émergentes , 2h, Ecole thématique OSUR sur les systèmes complexes, Rennes, France

Doctorat : F. Coste & J. Nicolas, Linguistique des séquences biologiques, 4h, Ecole Jeunes Chercheurs en Informatique Mathématique, Rennes, France

Doctorat: D. Eveillard, Modélisation du temps pour la vérification des systèmes dynamiques, 2h, Ecole Jeunes Chercheurs en informatique mathématique, Rennes, France.

Doctorat: D. Eveillard, From Omics data to models, 4h, Ecole Thématique Ecologie et Génomique Environnementale, Aussois, France.

Doctorat : A. Siegel, Introduction aux systèmes dynamiques, 2h, Ecole Jeunes Chercheurs en Informatique Mathématique, Rennes, France

8.2.2. Seminars

- J. Bourdon , *Quelques outils pour étudier la dynamique des réseaux génétiques*, 10th days of the GenOuest platform: biological networks, 2012.
- F. Coste, *Characterization of protein families: overpassing HMM expressivity*, second meeting Idealg, Rennes sept. 2012
- D. Eveillard, *Temporal and quantitative behaviors of biological systems - Can we learn something by modeling via a systems biology viewpoint ?*, séminaire de la station biologique de Roscoff, Roscoff.
- D. Eveillard, *Quantitative modeling of biological systems*, Biocore seminar, Inria Sophia-Antipolis.
- G. Andrieux, *Analyzing Large Models of TGFbeta with Cadbiom and the Process Hitting*, Ecole Jeunes Chercheurs en Informatique Mathématique 2012, Rennes.
- S. Prigent, *Methods of metabolic network reconstruction: corresponding contributions*, second meeting Idealg, Rennes sept. 2012
- S. Prigent, *Reconstruction de réseaux métaboliques par la programmation logique*, Ecole Jeunes Chercheurs en Informatique Mathématique 2012, Rennes.
- S. Prigent, *Que nous apprend la reconstruction d'un réseau métabolique ?*, 10th days of the genouest platform: biological networks, 2012.
- A. Siegel, *A review on Pisot conjecture, coincidence conditions and related graphs*, TU Wien, department of mathematics, 2012.
- A. Siegel, *Using contraints programming to investigate the robustness of biological networks reconstruction*, University of Chile, 2012.
- A. Siegel, *Quelques approches formelles pour tester la robustesse de processus de reconstruction de réseaux*, Séminaire du réseau NetBio, 2012.
- V. Wucher. *Modélisation d'un réseau de régulation d'ARN pour prédire des fonctions de gènes impliqués dans le mode de reproduction du puceron du pois*. Journées "Bioinformatique des ARNnc", Toulouse.

8.2.3. Supervision

HdR : Jérémie Bourdon, *Sources probabilistes : des séquences aux systèmes*, Université de Nantes, 5 décembre 2012 [28].

PhD in progress : Oumarou Abdou-Arbi *Analyse Automatisée et générique des réseaux métaboliques en nutrition*, started in October 2010, supervised by A. Siegel and T. Tabsoba (Burkina-Faso).

PhD in progress : Geoffroy Andrieux, *Discrete approach modeling of biological signaling pathway*, started in October 2010, supervised by N. Théret (Inserm) and M. Le Borgne

PhD in progress : Andres Aravena, *Introduire des approches combinatoires dans des modèles probabilistes pour la découverte d'évènements de régulation d'un système biologique à partir de données hétérogènes*, started in July 2011, supervised by A. Maass (CMM, University of Chile) and A. Siegel.

PhD in progress : Gaëlle Garet, *Discovery of enzymatic functions in the framework of formal languages*, started in October 2011, supervised by J. Nicolas and F. Coste.

PhD in progress : Clovis Galiez, *Syntactic modelling of protein structure.*, started in October 2012, supervised by F. Coste.

PhD in progress : Vincent Picard, *Analyse dynamique d'algorithmes et dynamique symbolique pour l'étude de modèles semi-quantitatifs en biologie des systèmes*, started in September 2012, supervised by A. Siegel and J. Bourdon.

PhD in progress : Sylvain Prigent, *Modélisation par contraintes pour le contrôle génomique et physiologique de l'adaptation des algues brunes à la salinité de l'eau*, started in October 2011, supervised by A. Siegel and T. Tonon (UMR 7150, station biologique de Roscoff)

PhD in progress : Santiago Videla, *Applying logic programming to the construction of robust predictive and multi-scale models of bioleaching bacteria*, started in November 2011, supervised by A. Siegel

PhD in progress : Valentin Wucher, *Modélisation d'un réseau de régulation d'ARN pour prédire des fonctions de gènes impliqués dans le mode de reproduction du puceron du pois*, started in November 2011, supervised by J. Nicolas and D. Tagu (INRA)

8.2.4. Juries

- *Member of habilitation thesis jury*. J. Bourdon, Université de Nantes [A. Siegel].
- *Member of Ph-D thesis jury*. P. Vanier, Université de Marseille [A. Siegel]. M. Noual, ENS Lyon [A. Siegel]. P. Bordron, Univ. Nantes [D. Eveillard]
- *Referee of Ph-D thesis*. S. Thiele, University of Potsdam [A. Siegel]. N. Loira, University of Bordeaux [A. Siegel].

GENSCALE Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Meeting organization and scientific animation

- **JOBIM** the annual french conference on computational biology was organised this year by Genscale. C. Lemaitre and P. Peterlongo coordinated the organisation comittee. JOBIM 2012 took place from the 3rd to the 6th of June at Université Rennes 1 and gathered 375 participants mainly from France and french-speaking countries, bringing together researchers from the mathematical, computational and life sciences. The program was of high quality, including 7 international key-note speakers and 33 selected communications, along with 112 exposed posters and 6 industrial partners, participating through communications and exhibitions. This conference is a cornerstone in the French (speaking) computational biology research. It enables the whole community to meet, to share scientific results and to organize the discipline. Moreover, it provided a large visibility to the host city and to the organizing team. [web site: http://jobim2012.inria.fr/].
- **Seminar** A weekly seminar of bioinformatics is organized within the laboratory. Attendees are member of the ex-symbiose team (now teams Genscale, Dyliss and Genouest), biologists from Brittany and computer scientists from the laboratory. [web site: http://symbiose.irisa.fr/symbiose-seminars]
- **Discussion group on NGS** This working group brings together biologists and computational scientists, mainly from Rennes. Approximatively every two months, it enables to share experiences, raise new questions or propose news solutions about NGS issues. This groups is highly appreciated, between 40 and 50 persons attend this events and some from distant sites (Roscoff, Nantes) follow the meeting through visioconference. [web site: http://ngs.genouest.org/]
- **Sessions organised at ISMP 2012** Sessions "Bioinformatics and Combinatorial Optimization I" and "Combinatorial Optimization: Distance geometry applications" were organised at the 21st International Symposium on Mathematical Programming (ISMP 2012) in Berlin. http://ismp2012.mathopt.org/
- **Winter School : Algorithms in Structural Bio-informatics**, was co-organised by R. Andonov in december 2012 at Inria Sophia Antipolis.
- **Bioinformatics tutorials**, at CARI (Conference Africaine de Recherche en Informatique) in Alger (Algérie), organized by D. Lavenier [web site: http://cari-info.org/]

9.1.2. Conference program committees

- International Conference on Field Programmable Logic and Applications (FPL) [D. Lavenier]
- International Conference on Engineering of Reconfigurable Systems and Algorithms (ERSA) [D. Lavenier]
- Southern Programmable Logic Conference (SPL) [D. Lavenier]
- International Conference on ReConFigurable Computing and FPGAs (ReConFig) [D. Lavenier]
- Workshop on Emerging Parallel Architectures (WEPA 2012) [D. Lavenier]
- ACM International Conference on Computing Frontiers (UCHPC Workshop) [D. Lavenier]
- IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP) [D. Lavenier]
- IEEE International Conference on Parallel and Distributed Systems (ICPADS 2012) [D. Lavenier]

- Workshop on Computational Optimization (WCO12), Wroclaw, Poland, September 9–12, 2012 [A. Mucherino, R. Andonov]
- Data Mining in Agriculture (DMA12), Berlin, Germany, July 20, 2012. [A. Mucherino]
- 21st International Symposium on Mathematical Programming (ISMP12), Berlin, Germany, August 19–24, 2012 [A. Mucherino, R. Andonov]
- JOBIM'2012 [D. Lavenier, C. Lemaitre, P. Peterlongo]
- SeqBio 2012 [P. Peterlongo]

9.1.3. Administrative functions: scientific committees, journal boards

- Member of the administrative council of ISTIC [R. Andonov]
- ANR Evaluation Committee (Numerical Models Program) [D. Lavenier]
- Reviewer for NSF projects [D. Lavenier]
- Recruitment committees: 2 assistant professors [P. Peterlongo, D. Lavenier], 5 Inra engineers [F. Legeai]
- Member of the Editorial Board of The Scientific World JOURNAL, bioinformatics domain [D. Lavenier]
- Member of Inria CDT [D. Lavenier]
- Member of the RAPSODYN Governing Council [D. Lavenier]
- MESR/DGRI - MEI Expert (International Cooperation Program) [D. Lavenier]
- Inria center referee of Scientific mediation [P. Peterlongo]
- Member of the redaction committee Ouest Inria [P. Peterlongo]
- publication reviewing for NAR, BMC Genomics, Bioinformatics, briefing in Bioinformatics, BMC Bioinformatics, PLoS One, European Journal of Entomology, Bulletin of entomological research, Symmetry, Mathematical Programming, RECOMB, International Journal of Reconfigurable Computing, journal of experimental algorithms, Recent Patents on DNA and Gene Sequence [D. Lavenier, F. Legeai, A. Mucherino, C. Lemaitre, P. Peterlongo].

9.1.4. Invited talks

- D. Lavenier gave an invited talk at CARI (Conference Africaine de Recherche en Informatique) in Alger (Algerie)
- A. Mucherino gave an invited talk at IMECC, UNICAMP, Campinas (Brazil)
- A. Mucherino gave an invited talk at BIA, INRA, Toulouse
- A. Mucherino gave an invited talk at the Department of Informatics, University of Florence (UNIFI), Florence (Italy)
- P. Peterlongo gave an invited talk at "Journee axe genomique biogenouest" (Nantes)
- C. Lemaitre gave an invited talk at Inria Bonsai team in Lille
- C. Lemaitre gave an invited talk at "Séminaire BioSticker", LINA (Nantes)

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : A. Mucherino, R. Andonov, P. Peterlongo, Graph algorithms, 130h, L3, Univ. Rennes 1, Rennes France.

Licence : R. Andonov, Algorithmics, 20h, L3, Univ. Rennes 1, Rennes France.

Licence : D. Lavenier, Computer Architecture and system , 70 h, L3 - ENS Magister, Rennes, France

Master : R. Andonov, Advanced algorithmics, 20h, M1, Univ. Rennes 1, Rennes France.

Master : R. Andonov, A. Mucherino, Operations research, 94h, M1, Univ. Rennes 1, France.

Master : G. Chapuis, Compilation, 41h, M1, Univ. Rennes 1, France.

Master : D. Lavenier, Bioinformatics, 20h, M2, Angers, France

Master : A. Mucherino, Initiation to systems and networks, 41h, M2, Univ. Rennes 1, France

Master : C. Lemaitre, P. Peterlongo, Text algorithmics for Bioinformatics, 40 h, M1, Univ. Rennes 1, France.

Master : C. Lemaitre, Dynamical systems for biological networks, 23h, M2, Univ. Rennes 1, France

Master : F. Legeai, Bioinformatics, 4h, M2, Univ. Rennes 1, France.

Master : A. Mucherino, R. Andonov, P. Peterlongo, Sequence and structure algorithms, 50h, M2, Univ. Rennes 1, France

9.2.2. Supervision

PhD Defense: Rayan Chikhi, *Computational methods for de novo assembly of next-generation sequencing data* [10] , ENS Cachan, defended on July 2nd 2012, supervised by D. Lavenier [online manuscript: http://tel.archives-ouvertes.fr/tel-00752033/]

PhD in progress : Guillaume Chapuis, *Bioinformatique parallèle*, Univ. Rennes 1, started in October 2010, supervised by D. Lavenier and R. Andonov

PhD in progress : Mathilde Le Boudic-Jamin, *Through Flexible Protein-Protein Docking*, Univ. Rennes 1, started in October 2011, supervised by R. Andonov

PhD in progress : Nicolas Maillet, *Algorithme pour l'assemblage de données NGS de métagénomique*, Univ. Rennes 1, started in November 2010, supervised by D. Lavenier and P. Peterlongo

PhD in progress : Erwan Scaon, *Modèles et algorithmes pour l'assemblage de novo de génomes à forte redondance*, Univ. Rennes 1, started in October 2012, supervised by D. Lavenier and C. Lemaitre

PhD in progress : François Moreews, *Environnement intégré de conception et d'exécution de workflows en bioinformatique: du prototypage au calcul intensif. Applications à la recherche de motifs de régulation dans les génomes*, Univ. Rennes 1, started in November 2012, supervised by D. Lavenier and S. Lagarigue

9.2.3. Juries

- *President of Ph-D thesis jury*. N. Abbas, ENS Cachan [R. Andonov]
- *Member of Ph-D thesis juries*. I. Wohlers, Univ. Amsterdam [R. Andonov], A. Nicolas, Université de Rennes 1 [R. Andonov], R. Saidi, Université de Clermont-Ferrand [R. Andonov], O. Gaci Université du Havre [R. Andonov]
- *Referee of Ph-D thesis*. T. Tan Truan, Université de Lille [D. Lavenier]

9.3. Popularization

- Participation to the event "A la découverte de la recherche" (presentation of the research activity to high school students) [D. Lavenier]

IBIS Project-Team

8. Dissemination

8.1. Editorial, animation, and reviewing activities

Guillaume Baptist

Type	Journal, conference, agency
Editor	French-language web site on synthetic biology, theoretical biology, and philosophy, http://www.cellule-et-futur.fr

Eugenio Cinquemani

Type	Journal, conference, agency
Associate Editor	European Control Conference (ECC) 2012

Hidde de Jong

Type	Journal, conference, agency
Member Editorial Board	Journal of Mathematical Biology
Member Editorial Board	ACM/IEEE Transactions on Computational Biology and Bioinformatics
Member Editorial Board	Biosystems
Member Program Committee	CMSB 12, DKRC 12, ECCB 12, IEEE BIBM 12, JOBIM 12, PAIS 12, QR 12
Member Scientific Advisory Board	Microbiology and Food Chain Department, INRA
Member Review Committee	International Human Frontier Science Program (HFSP)
President Recruitment Committee	Assistant-professor ENS, Paris, department of Biology
Member PhD Committee	Sara Berthoumieux (Université Joseph Fourier)
Member PhD Advisory Committee	Matthieu Trauchessec (CEA/Metabolic Explorer and Université Joseph Fourier), Caroline Baroukh (Inria/INRA and Université de Montpellier 2)
Coordinator (with C. Ambroise and F. Molina)	Working group on Transcriptome, protéome, modélisation, inférence et analyse des réseaux biologiques of GDR CNRS 3003 Bioinformatique moléculaire
Advisor	Grenoble team for iGEM 2012 competition
Project reviews	ANR, Région Acquitaine, FRS, CNRS, Technical University Munich, NWO

Johannes Geiselmann

Type	Journal, conference, agency
Member Recruitment Committee	Professor in bioinformatics, INSA Lyon
Member Recruitment Committee	Assistant-professor, Université Joseph Fourier
Member PhD Committee	John Lalith (ENS Lyon), Axelle Dawidas (Université Joseph Fourier), Sara Berthoumieux (Université Joseph Fourier), Guillaume Baptist (Université Joseph Fourier), Jérôme Izard (Université Joseph Fourier)
Member PhD Advisory Committee	Khady Sall (CEA and Université Joseph Fourier), Xuejiao Jiang (Université Claude Bernard, Lyon)
Advisor	Grenoble team for iGEM 2012 competition

Stéphane Pinhal

Type	Journal, conference, agency
Advisor	Grenoble team for iGEM 2012 competition

Delphine Ropers

Type	Journal, conference, agency
Member Recruitment Committee	Ingénieur de recherche INRA
Member Organization Committee	SeMoVi (Séminaire de Modélisation du Vivant)
Member PhD Committee	Jérôme Izard (Université Joseph Fourier)
Member PhD Advisory Committee	Claire Villiers (Université Joseph Fourier)
Advisor	Grenoble team for iGEM 2012 competition
Project reviews	CNRS

Valentin Zulkower

Type	Journal, conference, agency
Advisor	Grenoble team for iGEM 2012 competition

8.2. Other administrative activities

Eugenio Cinquemani is member of the Comité des Utilisateurs des Moyens Informatiques (CUMI) and of the Commission des Emplois Scientifiques at Inria Grenoble - Rhône-Alpes.

Hidde de Jong is local representative of the Department of International Relations of Inria at the Grenoble - Rhône-Alpes research center. He is also member of the working group on International Relations of the Conseil d'Orientation Scientifique et Technique (COST) of Inria.

Johannes Geiselmann is head of the Control of Gene Expression group in the Laboratoire Adaptation et Pathogénie des Microorganismes (UMR 5163) and director of the laboratory.

Yves Markowicz is director of the BSc department at Université Joseph Fourier.

François Rechenmann is leader of the editorial committee of the Interstices website (http://interstices.info).

François Rechenmann has been commissioned by the Director of Inria Grenoble - Rhône-Alpes to help and to coach PhD students, in the research center, who encounter problems of various sorts during their thesis.

Delphine Ropers represents Inria Grenoble - Rhône-Alpes in the scientific board of IXXI, the Complex Systems Institute in Lyon (http://www.ixxi.fr). She is also member of the Commission de Formation Permanente at Inria Grenoble - Rhône-Alpes.

Diana Stefan is a representative of the PhD candidates within the committees of the Doctoral School MSTII in Grenoble.

8.3. Seminars, presentations, and PhD thesis defenses

Guillaume Baptist

Title	Event and location	Date
Les réseaux de régulation chez la bactérie Escherichia coli	PhD thesis defense, Université Joseph Fourier	Aug. 2012

Sara Berthoumieux

Title	Event and location	Date
Methods for identification of biochemical network models	PhD thesis defense, Université Claude Bernard, Lyon	Jun. 2012

Eugenio Cinquemani

Title	Event and location	Date
Identifiability and identification of dynamic models of biochemical regulatory networks	INRIabcd seminar, Inria Grenoble - Rhône-Alpes, Villeurbanne	Feb. 2012
Structural and practical identifiability of approximate metabolic network models	16th IFAC symposium on System Identification (SYSID), Brussels (Belgium)	Jul. 2012

Hidde de Jong

Title	Event and location	Date
Piecewise-linear modeling of gene regulatory networks	Invited talk at Workshop on Structural Dynamical Systems (SDS-12), Monopoli (Italy)	Jun. 2012
Shared control of gene expression in bacteria by transcription factors and global physiological state	Invited talk at Workshop on design, optimization and control in systems and synthetic biology, Paris	Jun. 2012
Modeling of gene regulatory networks	ICGEB Course on Advances in bioinformatics tools for the analysis of high-throughput omics data, Santiago (Chili)	Jul. 2012
Identification of metabolic network models from high-throughput data sets	Invited talk at Workshop on Statistical and dynamical models in biology and medicine, Stuttgart	Oct. 2012
Shared control of gene expression in bacteria by transcription factors and global physiological state	Invited talk at Journées Microbiologistes de l'INRA, Avignon	Nov. 2012
Integration of high-throughput datasets through dynamical modeling of regulatory networks	Tutorial at PROSPECTOM Workshop, Grenoble	Nov. 2012
Modélisation mathématique des réseaux de régulation génique	Closing conference of séminaire interacadémique des inspecteurs généraux et régionaux de mathématiques, Grenoble	Nov. 2012

Johannes Geiselmann

Title	Event and location	Date
Systems biology of Escherichia coli	Seminar at Université Claude Bernard, Lyon	Feb. 2012
The carbon catabolite repression network of Escherichia coli	Conference on Microbial Systems Biology, Taipei (Taiwan)	May 2012

Jérôme Izard

Title	Event and location	Date
Growth control and gene regulation in Escherichia coli	PhD thesis defense, Université Joseph Fourier	Dec. 2012

Delphine Ropers

Title	Event and location	Date
Modeling the gene expression machinery in Escherichia coli	Séminaire de Modélisation du Vivant (SeMoVi), Inria Grenoble - Rh?Alpes	Apr. 2012
Complex regulatory networks in bacteria: How bacteria face the unexpected	Ecole de Systèmes Complexes, Rennes	Oct. 2012

Diana Stefan

Title	Event and location	Date
Structural and parametric identification of bacterial regulatory networks A case study on the gene network regulating motility in E. coli	Poster presentation at journée scientifique de l'ARC6	Nov. 2012

8.4. Popular science writing

The members of IBIS are actively involved in the dissemination of research results in systems biology and bioinformatics to a wider, non-specialist audience. François Rechenmann is leader of the editorial committee of the Interstices (http://interstices.info). Interstices offers pedagogic presentations of research themes and activities in the computer science domain, including at its interface with life sciences.

In the context of the Math C2+ initiative for high-school students, François Rechenmann has led two sessions of a workshop introducing the notion of algorithm. The objective set to the students was to design an algorithm for sorting a stack of objects, such as pancakes, according to their size and through only one type of swapping operation (see http://interstices.info/algo-crepes for the presentation of the algorithm).

8.5. Teaching

Four members of the IBIS team are either full professor, associate professor or assistant professor at the Université Joseph Fourier or the UniversitÃ©Â Âierre Mendès-France in Grenoble. They therefore have a full teaching service (at least 192 hours per year) and administrative duties related to the organization and evaluation of the university course programs on all levels (from BSc to PhD). Besides the full-time academic staff in IBIS, the following people have contributed to courses last year.

Eugenio Cinquemani

Subject	Year	Location	Hours
Identification of dynamical models of genetic networks	5	INSA de Lyon	4

Hidde de Jong

Subject	Year	Location	Hours
Modeling and simulation of genetic regulatory networks	5	INSA de Lyon	16
Modeling and simulation of genetic regulatory networks	5	ENS, Paris	8

Delphine Ropers

Subject	Year	Location	Hours
Modeling and simulation of genetic regulatory networks	4	UniversitÃ©Â Âoseph Fourier	7.5
Modeling and simulation of genetic regulatory networks	5	INSA de Toulouse	4

Diana Stefan

Subject	Year	Location	Hours
Automatique et traitement du signal	2	INPG Phelma	32

Valentin Zulkower

Subject	Year	Location	Hours
Mathématiques générales (algèbre, géométrie, ...)	1	Université de Grenoble	45
Mathématiques générales (analyse, séries de Fourier, calcul matriciel)	1	Polytech Grenoble	90

Hidde de Jong organized with Daniel Kahn a module on the modeling of genetic and metabolic networks at INSA de Lyon.

MAGNOME Project-Team

9. Dissemination

9.1. Scientific Animation

Elisabeth Bon is :

member of the “Comité Technique d’Etablissement” (since 2008 until 2014)

member of the “Comité Hygiène et Sécurité, et Conditions de Travail” (since 2012) at the Univ. of Bordeaux Segalen.

Pascal Durrens is :

leader of the “Comparative Genomics” theme and member of the Scientific Council of the LaBRI UMR 5800/CNRS.

responsible for scientific diffusion for the Génolevures Consortium.

member of the editorial board of the journal ISRN Computational Biology, and was reviewer for the journal BMC Genomics

expert in Genomics for the Fonds de la Recherche Scientifique-FNRS (FRS-FNRS), Belgium

Tiphaine Martin is :

member of the Local Committee and member of Local Committee for Occupational Health and Safety of the Inria Bordeaux Sud-Ouest.

member of the GIS-IBiSA GRISBI-Bioinformatics Grid working group.

member of the Institut de Grilles, and active in the Biology/Health working group.

David Sherman is :

president of the Commission de Jeunes Chercheurs, Inria Bordeaux Sud-Ouest

member of the editorial board of the journal Computational and Mathematical Methods in Medicine

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : Elisabeth Bon, ICTs-Information & Communication Technologies (basic and advanced sections) and the national “IT and Internet certificate (C2i®, level 1) for the STS- biology variant Licence programs at the Univ. Bordeaux Segalen, and for MISMI Licence program at the Univ. Bordeaux 1. 109h éq. ED.

Licence & Master : Elisabeth Bon, Computer sciences & Bioinformatics-Genomics, Computerised resources, data banks and Methods for the Biology & Healthcare STS (Sciences, Technologies & Sante) bachelor’s degrees, research oriented STS licence and master’s degrees . 102h éq. ED.

Licence : Elisabeth Bon is responsable for The bachelor’s degree “Information Technologies & Internet advanced course”, Life Sciences Department, University Bordeaux

Licence : Elisabeth Bon is responsable for The “IT and Internet certificate (C2i®), level 1” at Life Sciences Department, University Bordeaux Segalen

Licence : Elisabeth Bon is responsable for The presidence (2005-2007; since sept. 2011) of the “IT and Internet certificate (C2i, level 1) committee” in charge of the C2i evaluation and certification for students (n=2000), University Bordeaux Segalen

Licence : Laetitia Bourgeade, Informatics for MISMI Licence program, University Bordeaux 1, 43h éq. ED.

Master : Laetitia Bourgeade, Statistics for bioinformaticians, University Bordeaux 1, 16h éq. ED.

Master : Laetitia Bourgeade, Object-oriented Programming, 2ème année Ingénieur, EnseirbMatmeca (Institut Polytechnique de Bordeaux), Bordeaux, 34h éq. ED.

Master : Laetitia Bourgeade, Methods & Tools for Systems Biology, 2ème année Ingénieur, Enseirb-Matmeca (Institut Polytechnique de Bordeaux), Bordeaux, 22h éq. ED. Tiphaine Martin and Pascal Durrens have :

the supervision of 4 Bioinformatics MSc students from the University of Bordeaux: Master : Development of search tools on Ge´nolevures databases, 6hETC, M1, University Bordeaux 1 and University Bordeaux Segalen, France

Master : Tiphaine Martin, Utilisation of EGEE GRID via virtual organisation GRISBI , 8h, niveau (M2), University Lyon, France

Master : Tiphaine Martin, Utilisation of EGEE GRID via virtual organisation GRISBI, 8h, niveau (M2), INRA Toulouse, France

Master : David Sherman, Web et Interfaces Homme-Machine, 50h, 2ème année Ingénieur, Enseirb-Matmeca (Institut Polytechnique de Bordeaux), Bordeaux

9.2.2. Supervision

PhD in progress : L. Bourgeade, Filtres sur les arborescences modélisant les ARN et plasticité génique, 2011–, E. Bon, P. Ferraro and J. Allali

PhD in progress : N. Golenetskaya, Big Data for comparative genomics, 2009–, D. Sherman

PhD in progress : R. Issa, Analyse symbolique de données génomiques, 2010–, D. Sherman

PhD in progress : A. Zhukova, Knowledge engineering for biological networks, 2011–, D. Sherman

9.2.3. Juries

David Sherman:

was external reviewer and member of the thesis defense jury for Anisah Ghoorah, Nancy.

was a member and president of the jury for the thesis defense of Jean-Paul Soularue, Bordeaux.

MORPHEME Team

8. Dissemination

8.1. Scientific Animation

- Florence Besse was reviewer for UPMC, AFM, DFG (grant agencies).
- Laure Blanc-Féraud was reviewer for IEEE Trans on Signal processing, Inverse Problems, Signal Image and Video processing (Eurasip) and the conferences IEEE ISBI, IEEE ICIP, IEEE ICASSP. She is associate editor for "Revue Traitement du Signal". She was co-organisor of the workshop on New Computational Methods in Inverse Problems - NCMIP 2012 (NCMIP) and was associate editor for the conferences : RFIA 2012, Workshop MIA 2012, Workshop NCMIP 2012, International conference IEEE ISBI 2013. She is member of the IEEE BISP (Biomedical Imaging Signal Processing) Technical Committee, member of the evaluation committee of the ANR, program blanc SIMI3, member of the scientific council of Institute INS2I of CNRS, member of bureau du comité des projets Inria SAM and supplant member of CNECA (Comité National des Enseignants Chercheurs en Agriculture). She is director of GdR ISIS of CNRS
- Xavier Descombes was reviewer for the conference ISBI 2012 and the journals IEEE TMI, IEEE IP $\cdots$ He associated editor of DSP (Digital Signal Processing), expert for the DRRT Provence Alpes Côte d'AZur and DRRT Paris Ile de France. He is member of the Scientific Committee of the competitivness pole Optitech and associate member of IEEE BISP (Biomedical Imaging Signal Processing) Technical Committee.
- Saima Ben Hadj was reviewer for Signal Image and Video Processing.
- Eric Debreuve was member of the Program Committee of Advanced Concepts for Intelligent Vision Systems (ACIVS) 2012 and member of the Technical Program Committee of European Signal Processing Conference (EUSIPCO) 2012. He was reviewer for *IEEE* Transactions on Image Processing, *Springer* Machine Vision and Applications, *Springer* Multimedia Tools and Applications, *Lavoisier* Revue Traitement du Signal.
- Grégoire Malandain was a member of the Local Organizing Committee of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI'12) in Nice. He was also a member of the review committee of International Conference on Pattern Recognition (ICPR'12) and the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI'12). He is member of the Scientific Committee of the MIA department of INRA.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

License : Alejandro Mottini, Informatique générale, 24 heures équivalent TD , niveau L1, UNS, France

License : Alejandro Mottini, Introduction au web, 16 heures équivalent TD , niveau L1, UNS, France

Master : Mikael Carlavan, Traitement Numérique des Images, 10 heures équivalent TD , niveau M2, UNS, France

Master : Alejandro Mottini, Outils Mathematiques pour l'Image, 2 heures équivalent TD , niveau M2, UNS, France

Master : Xavier Descombes, Analyse d'image, 12 heures équivalent TD , niveau M2, UNS EPU, France

Master : Xavier Descombes, Traitement d'images, 6,25 heures équivalent TD , niveau M2, ISAE, France

Master : Xavier Descombes, Reconnaissance de formes et analyse de données, 6,25 heures équivalent TD , niveau M2, ISAE, France

Master : Xavier Descombes, Techniques avancées en signal et image, 5 heures équivalent TD , niveau M2, ISAE, France

Master : Xavier Descombes, Imagerie numérique, 16 heures équivalent TD , niveau M2, UNS, France

Master : Laure Blanc-Féraud, Deconvolution and denoising for confocal microscopy, 18heqTD, niveau M2, université de Nice Sophia Antipolis, France.

Master : Laure Blanc-Féraud, Traitement numérique des images, 12eqTD, niveau M2, université de Nice Sophia Antipolis, France.

Master : Laure Blanc-Féraud, Imagerie numérique, 12eqTD, niveau M2, université de Nice Sophia Antipolis, France.

Master : Eric Debreuve, Introduction to Inverse Problems in Image Processing, 28.5 Eq. TD, Niveau M2, Université de Nice-Sophia Antipolis, France.

Master: Eric Debreuve, Basics of Image Processing, 17.5 Eq. TD, Niveau M2, Université de Nice-Sophia Antipolis, France.

Master: Alexis Zubiolo, Digital Image Processing, 10h Eq. TD, Université de Nice-Sophia Antipolis, France.

Licence: Alexis Zubiolo, Computer Science, Introduction to Computer Science, 19h Eq. TD, Université de Nice-Sophia Antipolis, France.

8.2.2. Supervision

HdR : Florence Besse, Régulation des ARNms et Morphogenèse axonale chez la drosophile, soutenue le 19 octobre 2012.

PhD : Sylvain Prigent, Apport de l'imagerie multi et hyperspectrale pour l'évaluation de la pigmentation de la peau, UNS, soutenue le 11 novembre 2012, Xavier Descombes (advisor), Josiane Zeruria, Inria CRI-SAM (co-advisor)

PhD in progress : Alejandro Mottini, Métriques de graphes pour la caractérisation des axones, depuis octobre 2011, Xavier Descombes (advisor), Florence Besse (co-supervisor).

PhD in progress : Mikale Carlavan, Optimization of the compression-restoration chain for satellite images, Laure Blanc-Féraud (advisor) M. Antonini, I3S (co-advisor).

PhD in progress, Saima Ben Hadj, Blind restoration of space variant 3D confocal microscopic images, Laure Blanc-Féraud (advisor).

PhD in progress, Roberto Cavicchioli, fast gradient method for hyperparameter estimation in wavelet regularization inverse problems in imaging, Laure Blanc-Féraud (co-advisor during 3 months).

PhD in progress, Alexis Zubiolo, Statistical Machine Learning for Automatic Cell Classification, Eric Debreuve (advisor).

8.2.3. Juries

HDR : Florence Besse, referee of a Habilitation committee at Univ. Paris 11

PhD : Florence Besse, referee of a PhD committee committee at UMPMC, Villefranche sur mer

PhD : Xavier Descombes, referee of the PhD thesis committee of Sylvain Prigent, UNS

PhD : Xavier Descombes, reviewer of the PhD thesis committee of Marcello Pereyra, ENSEEIHT

PhD : Xavier Descombes, reviewer of the PhD thesis committee of Pauline Julian, ENSEEIHT

PhD : Xavier Descombes, reviewer of the PhD thesis committee of Guillaume Zinck, Univ. Bordeaux 1

PhD : Laure Blanc-Féraud, referee of the PhD committee of Raphaël Soulard, XLIM.

HDR : Laure Blanc-Féraud, reviewer of the Habilitation of Thomas Rodet, University Paris Sud.

HDR : Laure Blanc-Féraud, reviewer of the Habilitation of Jérôme Gilles, ENS Cachan.

PhD : Grégoire Malandain, reviewer of the PhD thesis committee of V. Bismuth (Paris-Est University)

PhD : Grégoire Malandain, reviewer of the PhD thesis committee of P. Chassignet (École Polytechnique)

PhD : Grégoire Malandain, reviewer of the PhD thesis committee of C. Person (Lorraine University),

PhD : Grégoire Malandain, reviewer of the PhD thesis committee of G. Pizaine (Telecom ParisTech),

HDR : Grégoire Malandain, reviewer of the Habilitation committee of J. Debayle (Saint-Étienne University),

PhD : Grégoire Malandain, referee of the medicine thesis of M. Laffon (Nice University).

8.3. Popularization

Xavier Descombes has given a conference at lycée René Char (Avignon) within the program “Science au Lycée”

Xavier Descombes has given a seminar at “journée Traitement d’images” organized by Optitec at LSI Luminy (Marseille)

Xavier Descombes has given a seminar at "Matinale des Pôles" organized by the foundation of Sophia Antipolis

SERPICO Team

9. Dissemination

9.1. Scientific Animation

- *Technical program committees of conferences*
  - Charles Kervrann: PC member for ISBI'2012, ISBI'2013, reviewer for ICASSP'2012, ICASSP'2013, ICIP'2012, ICIP'2013, EMMCPRV'2013.
  - Patrick Bouthemy: PC member for ICPRAM'2013, MLDM'2013, TAIMA'2013, reviewer for ISBI'2012, ISBI'2013, ICRA'2013, ICPR'2012, EUSIPCO'2012, ACIVS'2012.
- *Journal reviewing*
  - Charles Kervrann: reviewer in 2012 for Image and Vision Computing, IEEE Transactions on Image Processing.
  - Patrick Bouthemy: reviewer in 2012 for International Journal of Computer Vision, IEEE Transactions on Circuits snd Systems for Video Technology, IEEE Computer Graphics and Applications, IEEE Signal Processing Letters, Signal Image and Video Processing, Results in Physics.
- *Participations in seminars, invitations, awards*
  - Charles Kervrann was invited to give a talk entitled "Patch-based Image Denoising in Light and Electron Microscopy" at the "BioImage Informatics" conference (Max Planck Institute, Dresden, Germany, November 2012) and at the "Statistics and Images" workshop (University of Strasbourg, November 2012); he was invited to give a talk entitled "Aggregation Methods for Optical Flow Computation" at the "SIAM Imaging Science" conference (Philadelphia, PA, May 2012) and at the "Mathematics and Image Processing" conference (University of Orleans, June 2012).
  - P. Bouthemy was invited to give a talk entitled "Estimation et interprétation du mouvement dans des séquences d'images", Interdisciplinary Mifobio School http://www.mifobio.fr/, plenary session (Seignosse, September 2012).
- *Responsibilities*

Charles Kervrann:

Member of the IEEE BISP "Biomedical Image and Signal Processing" committee,

Member of executive board of the GdR 2588 ("Microscopie Fonctionnelle du Vivant") CNRS, member of the scientific committee of the Interdisciplinary MiFoBio School CNRS (http://www.mifobio.fr),

Member of the executive board of the project committee of the Inria Rennes - Bretagne Atlantique centre,

Member of the 2012 CORDIS post-doctoral fellowships committee (Inria Rennes - Bretagne Atlantique centre),

Member of the Scientific Council of the INRA Rennes Research Centre,

Deputy-head of the GIS Europia (http://gis-europia.univ-rennes1.fr/) (Rennes imagery platform).

Patrick Bouthemy

Deputy member of the board of directors and member of the Selection and Validation Committee of the Images & Réseaux competitivity cluster,

Deputy member of the board of directors of IRT (Technological Research Institute) B-com,

President of AFRIF (Association Francaise pour la Reconnaissance et l'Interprétation des Formes) and member of the board of the GRETSI (Groupement de Recherche en Traitement du Signal et des Images).

- *Other activities*
  - SERPICO is involved in the French network GdR 2588 "Microscopie Fonctionnelle du Vivant" CNRS,
  - SERPICO is member of the regional BioGenOuest GIS.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: Charles Kervrann, Geometric Modeling for Shapes and Images, 7.5 hours, M2 SISEA, University of Rennes 1,

Engineer Degree: Charles Kervrann, Statistical Models and Image Analysis, 30 hours + 15 hours (TP, Denis Fortun), 3rd year, Ecole Nationale de la Statistique et de l'Analyse de l'Information ENSAI, Bruz,

Master: Patrick Bouthemy, Analysis of Image Sequences, 18 hours, M2 SISEA, ISTIC & University of Rennes 1,

Master: Patrick Bouthemy, Video Indexing, 9 hours, M2 Computer Science, ISTIC & University of Rennes 1,

Master & Engineer Degree: Patrick Bouthemy, Motion Analysis, 16.5 hours, M2 IRIV & 3rd year, ENSPS & University of Strasbourg.

9.2.2. Supervision

PhD in progress: Philippe Roudot, Lifetime estimation of moving vesicles in FLIM microscopy, started in October 2010, supervised by Charles Kervrann and Francois Waharte (UMR 144 CNRS PICT Institut Curie),

PhD in progress: Denis Fortun, Optical flow computing, aggregation methods and statistical methods: application to time-lapse fluorescence microscopy, started in October 2010, supervised by Charles Kervrann and Patrick Bouthemy,

PhD in progress: Antoine Basset, Event detection and recognition in video-microscopy and applications in cell biology, started in October 2012, supervised by Patrick Bouthemy and Charles Kervrann in collaboration with Jérôme Boulanger (UMR 144 CNRS Institut Curie),

PhD in progress: Alice Bergonzoni, Methods and algorithms for tissue microarrays image analysis, started in January 2013, supervised by Charles Kervrann and Vincent Paveau (Innopsys).

9.2.3. Juries

Referee of Habilitation thesis: A. Manzanera (ENSTA ParisTech) [Patrick Bouthemy], C. Wolf (INSA Lyon) [Patrick Bouthemy]

Referee of PhD thesis: A.S. Coquel (INSA Lyon) supervised by H. Berry and A. Lindner [Charles Kervrann],

Chair of PhD thesis juries: S. Postec (University of Bretagne-Sud) supervised by J. Froment [Charles Kervrann], P. Dérian (University of Rennes 1)) supervised by E. Mémin [Patrick Bouthemy], L. Coutard (University of Rennes 1) supervised by F. Chaumette [Patrick Bouthemy], M. Ullah (University of Rennes 1) supervised by I. Laptev and P. Pérez [Patrick Bouthemy].

ASCLEPIOS Project-Team

8. Dissemination

8.1. Animation of the scientific community

8.1.1. Journal editorial boards

N. Ayache is the co-founder and the co-editor in Chief with J. Duncan (Professor at Yale) of *Medical Image Analysis*[6]. This scientific journal was created in 1996 and is published by Elsevier.

H. Delingette is a member of the editorial board of the journal *Medical Image Analysis* (Elsevier).

I. Strobant is editorial coordinator for *Medical Image Analysis*, Elsevier (since october 2001).

I. Strobant is editorial assistant for *IEEE Transactions on Medical Image Analysis*, (since october 2001)

N. Ayache is associated editor of *IEEE Transactions on Medical Imaging*[7].

N. Ayache is a member of the editorial board of the following journals: new SIAM Journal on Imaging Sciences, *Medical Image Technology* (Japanese journal) and *Journal of Computer Assisted Surgery* (Wiley).

X. Pennec is a member of the editorial board of the journal *Medical Image Analysis* (Elsevier), of the *International Journal on Computer Vision* (Springer) and of the SIAM Journal on Imaging Sciences (SIIMS).

8.1.2. Participation in the organization of conferences

The MICCAI 2012 conference gathered a record number of more than 1200 participants in the Acropolis Center in Nice, from the 1st to the 5th of October 2012. It was chaired by Nicholas Ayache. 32 satellites events, coordinated by Xavier Pennec, were held on the 1st and the 5th of October, while the main conference, whose scientific program was under the responsability of Hervé Delingette, took place from teh 2nd to the 4th of October. Agnès Cortell was in charge of the local organisation, with the help of M. Barret, G. Malandain, M. Sermesant, I. Strobant and the MCI company. Inria services, especially O. Carron, M. Oricelli, along with the students helped in the organisation too.

N. Ayache was the chair of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2012) in Nice.

H. Delingette was the program chair and a member of the local organization committee of International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI'12) which involved selecting 256 papers from 780 submissions, and organize the 7 oral sessions and the 18 poster sessions. He was also member of the program committees of the International Symposium on Biomedical Imaging (ISBI'12), the conference on Virtual Reality Interactions and Physical Simulation (VRIPHYS'12).

X. Pennec was workshop/challenges and tutorial chair (and a member of the local organization committee) of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2012) in Nice. This involved in particular the coordination of 32 MICCAI satellite events with 140 organizers and 975 participants. He was also a member of the program committees of: Int. Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI'2012); IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA 2012); Workshop on Biomedical Image Registration (WBIR 2012); Workshop on computational diffusion MRI (CDMRI'12).

[6] http://www.elsevier.com/wps/find/journaleditorialboard.cws_home/620983/editorialboard
[7] http://www.ieee-tmi.org/

M. Sermesant was a member of the program committee of International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI'12), and was a co-organisator of the MICCAI 2012 Workshop on Statistical Atlases and Computational Models of the Heart and the VPH Network of Excellence 2nd workshop on medical imaging software.

8.1.3. Scientific animation

Nicholas Ayache is member of the Aviesan national alliance on biosciences. He is also a member of the "Comité de la Recherche Biomédicale en Santé Publique (CRBSP)" of the Nice hospitals since 2008. He was invited in Fukuoka, Japan in February 2012 to evaluate a national program on "Computational Anatomy" funded by the MEXT.

Xavier Pennec is a member of the Doctoral follow-up Commitee (CSD) at Inria Sophia Antipolis since 2010. In 2012, he was elected member of the MICCAI Society boards of Directors for the period 2012-2016, and was an evaluator for the EU STREP PredictAD (neuroimaging in Alzheimer's disease), for the Netherlands Organisation for Scientific Research (NWO), for several project proposals submitted to the French research agency ANR.

H. Delingette is a member of the local committee in charge of the scientific selection of visiting scientists applications (Comité Nice). He was an evaluator for the integrated European project ARTREAT, for the Research Foundation Flanders (FWO), for several project proposals submitted to the French research agency ANR, to the Medicen Paris Innovative cluster.

M. Sermesant acted as an evaluator for the ANR, the CNRS and the Dutch and UK Research Councils. He is a member of the CUMIR (local committee representing the users of computer services) and of the CCC (local committee in charge of the selection of funding for courses and conferences organisation). He also participates in scientific animation in high schools, presenting research and medical imaging (2 times in 2012).

8.2. Teaching

Master 2 MVA and École Centrale de Paris. H. Delingette and X. Pennec are co-responsible of 2 modules on medical imaging (formation and analysis of medical images) (45 hours of lectures) at the the Master MVA of ENS Cachan "Mathematiques, Vision et Apprentissage". The second module is common to the 3rd year of Ecole Centrale Paris.

Master IFI - Computational Biology, Univ. Nice-Sophia-Antipolis. X. Pennec is responsible of a 21h module on Computational Anatomy and Physiology, with the participation of H. Delingette (9h)

Diplôme Inter Universitaire - Radiothérapie externe Haute Technicité, Univ. Nice-Sophia-Antipolis. X. Pennec gave a 3 h course.

8.3. PhD Theses and Internships

8.3.1. PhD defended in 2012

1. Hervé Lombaert, *Atlas Construction for Measuring the Variability of Complex Anatomical Structures*, Ecole Polytechnique de Montréal. June, 2012.
2. Marco Lorenzi, *Deformation-based morphometry of the brain for the development of surrogate markers in Alzheimer's disease*. University of Nice-Sophia Antipolis, December 2012. In collaboration with G.B. Frisoni, IRCCS Fatebenefratelli, Brescia, Italy.
3. Jatin Relan, *Planning of radiofrequency ablation of the heart using electromechanical models personnalized from cardiac images and electrophysiological signals*, Ecole des Mines de Paris. June, 2012.
4. Christof Seiler, *Trees on Geometrical Deformations to Model the Statistical Variability of Organs in Medical Images*. Joint PhD (co-tutelle) of University of Nice Sophia Antipolis and University of Bern. September 2012.

5. Nicolas Toussaint, *In vivo cardiac DTI*, King's College London, London. July 2012.

8.3.2. Current PhDs

1. Chloé Audigier, *Modeling radio-frequency ablation for the planing of abdominal tumors resection*, Nice Sophia-Antipolis University. Started in April 2012.
2. Thomas Benseghir, *3D/2D Coronary Registration for Interventional Cardiology Guidance*, Nice Sophia-Antipolis University. Started in March 2012.
3. Marine Breuilly, *Tracking and quantification of tumour processes in rodents with SPECT imaging* , Nice Sophia-Antipolis University. Started in November 2009
4. Rocio Cabrera Lozoya, *Radio frequency ablation planning for cardiac arrhythmia treatment through biophysical modelling and machine learning approaches*, Nice Sophia-Antipolis University. Started in February 2012.
5. Nicolas Cordier, *Simulation and Analysis and Simulation of Brain Tumors Images*, University of Lille. Started in February 2012.
6. Ezequiel Geremia, *Multi-scale computational models of brain tumors for medical image analysis*, Nice Sophia-Antipolis University. Started in December 2008.
7. Vikash Gupta, *Diffusion tensor imaging of the brain: towards quantitative clinical tools*, Nice Sophia-Antipolis University. Started in November 2011.
8. Mehdi Hadj-Hamou, *Biophysical modeling of the anatomical evolution of the brain*, Nice Sophia-Antipolis University. Started in September 2012.
9. Bishesh Khanal, *Modeling the atrophy of the brain in Alzheimer's disease*, Nice Sophia-Antipolis University. Started in November 2012.
10. Arnaud Le Carvennec, *Registration and simulation of atrophy in Alzheimer's disease using MRI images*, University College London. Started in September 2011.
11. Loic Le Folgoc, *Biophysical Personalization of Cardiac Models based on Machine Learning*, Nice Sophia-Antipolis University. Started in June 2012.
12. Stéphanie Marchesseau, *Simulation of patient-specific cardiac models for therapy planning*, Ecole des Mines de Paris. Started in November 2009.
13. Jan Margeta, *Indexation of time-series 4D cardiac MR images*, Ecole des Mines de Paris. Started in March 2011.
14. Kristin Mc Leod, *Modeling of Cardiac Growth and Deformation from Medical Images*, Nice-Sophia Antipolis University. Started in Octobere 2010. .
15. Adityo Prakosa, *Analysis and Simulation of the heart function from multimodal cardiac images*, Nice-Sophia Antipolis University. Started in November 2008.
16. Erin Stretton, *Modelling and simulation of brain tumor growth from time-series of 3-D MR images to improve diagnosis and therapy*, Ecole des Mines de Paris. Started in June 2010.
17. Hugo Talbot, *Simulation of Radiofrequency ablation of cardiac cells*, University of Lille. Started in September 2010.
18. Anant Vemuri, *Augmented reality for image-guided surgery*, Nice-Sophia Antipolis University. Started in 2012.

8.3.3. Master Student

1. Sonia Durand, *Generation of personalized volumetric meshes of cardiac ventricles*, Ecole Centrale de Lyon. From April to September 2012
2. Bishesh Khanal, *Modeling the atrophy of the brain in Alzheimer's disease*, Master Computational Biology and Biomedicine, University Nice-Sophia Antipolis. From April to September 2012

3. Matthieu Lê, *Enhancement of a pathophysiological model of brain tumor growth to take into account anatomical and metabolic information coming from MR images. Application to the simulation of tumor growth for better planning of therapeutic intervention*, Ecole Centrale de Paris. From May to December 2012.
4. Andreas Mieritz, *Interaction Segmentation of Medical Images*, DTU, Denmark. Started in September 2012.

8.3.4. Internship of Medical Doctor Student

1. Nicolas Bronsard, *Study of the 3D variability of the lower spine*, University Hospital of Nice-Sophia Antipolis.

8.3.5. Participation to thesis committees

N. Ayache participated as co-supervisor to the PhD thesis of Jatin Relan (École des Mines de Paris) and Marco Lorenzi (University of Nice-Sophia Antipolis).

Hervé Delingette participated as co-supervisor to the PhD thesis of Jatin Relan (École des Mines de Paris), as reviewer to the PhD thesis committee of C. Casta (Lyon University), G. Bousquet (Grenoble University), C. Conte (Marseille University).

Xavier Pennec participated as president to the PhD thesis committee of N. Duchateau (U. Pompeu Fabra, Barcelona, SP) and as co-supervisor to the PhD thesis of Christof Seiler (University of Nice Sophia Antipolis and University of Bern) and Marco Lorenzi (University of Nice-Sophia Antipolis).

Maxime Sermesant participated as co-supervisor to the PhD thesis committee of Jatin Relan (École des Mines de Paris).

8.3.6. Invited Lectures

We only give here the invited participations. Please refer to general references for the regular participation to conferences with a submission process.

- **Nicholas Ayache** gave the following invited lectures:
  - at the *Moroccan Academy of Sciences*, Rabat, Morocco on February 15, 2012
  - at the *3rd International Symposium on Computational Anatomy*, Fukuoka, Japan on March 4, 2012
  - at the *Scientific Council of Inria* for the ERC MedYMA project, Inria, France, on March 23, 2012
  - at the *Annual Guest Lecture of the Oxford Biomedical Imaging Festival*, Oxford, UK on October 25, 2012
  - at *Microsoft Research Cambridge*, Cambridge, UK on November 7, 2012
  - at the *Let's Imagine the Future symposium*, Rennes, France on November 9, 2012
  - at the *Ecole Centrale de Paris*, France on November 13, 2012
  - at the *Surgery for life innovation conference*, IHU de Strasbourg, France on December 21, 2012
- **Hervé Delingette** gave an invited lecture at the CardioStim 2012 Modeling session in Nice.
- **Xavier Pennec** gave invited lectures:
  - at the Workshop on Geometry and Statistics in Bioimaging: Manifolds and Stratified Spaces, Sonderborg, DK, October 8-12, 2012;
  - at the MICCAI workshop and challenge on Statistical Atlases and Computational Models of the Heart: Imaging and Modelling Challenges (STACOM 2012), Nice, October 5, 2012;
  - at the Premières rencontres Technologies de l'Information et de la Communication pour la santé mentale, 21 et 22 octobre 2011, Nice et Monaco.
  - at the PENN Image Computing and Science Lab (PICSL), Philadelphia, May 23, 2012;
  - at the Minisymposium on 4D Medical Imaging, SIAM Imaging Science Conf., Philadelphia, May 20-22, 2012.
- **Maxime Sermesant** was invited to organise a cardiac modelling session at the Cardiostim 2012 clinical conference. He was also an invited lecturer at the ISCAT 2012 conference: 9th International Symposium on Catheter Ablation Techniques and the DD21 conference on Domain Decomposition.

8.3.7. Nominations and Prizes

- **Nicholas Ayache** was awarded an ERC grant in Oct 2011, to start in April 2012 with the collaboration of H. Delingette, X. Pennec and M. Sermesant.
- **Nicholas Ayache** was elected CSO (Chief Scientific Officer) of the IHU of Strasbourg (Institut Hospitalo Universitaire) on January 1, 2012. More informations on: http://www.ihu-strasbourg.eu/Bienvenue.html
- **Caroline Brun**, collaborator of X. Pennec during her PhD, won the Young Scientist Publication Impact Award 2012 of the MICCAI Society (Oct 2012) for the paper "A tensor-based morphometry study of genetic influences on brain structure using a new fluid registration method", published at MICCAI 2008 by C. Brun, N. Leporé, X. Pennec, Y.Y. Chou, A.D. Lee, M. Barysheva, G.I. de Zubicaray, M. Meredith, K. McMahon, M.J. Wright, A.W. Toga, and P.M. Thompson.
- **Hervé Lombaert** won the MCV 2012 best paper award at the MICCAI workshop on Medical Computer Vision (Oct. 2012) for the paper "Groupwise Spectral Log-Demons Framework for Atlas Construction" by H. Lombaert, L. Grady, X. Pennec, J.-M. Peyrat, N. Ayache, F. Cheriet.
- **Stéphanie Marchesseau** received the Young Investigator award at the MICCAI 2012 conference held in Nice (Oct. 2012) for her paper [42] .
- **Hervé Lombaert** has received a prize from the research fund of Québec FRQ (http://www.frq.gouv.qc.ca) as the "star research student" of the month January 2013 for his paper [] .

ATHENA Project-Team

8. Dissemination

8.1. Scientific Animation

- R. Deriche is Adj. Director at the Doctoral School EDSTIC (http://edstic.i3s.unice.fr/index.html)
- R. Deriche is member of 4 Scientific Councils: University of Nice Sophia Antipolis, ITMO ITS (Institut des Technologies pour la Santé), Olea Medical Company (http://www.olea-medical.com/ and the GIS UNS-ENSL-CNRS-Inria.
- R. Deriche is member of the Administration Concil of AFRIF (Association Française pour la Reconnaissance et l'Interprétation des Formes) and of GRETSI (Groupe d'Etudes du Traitement du Signal et des Images).
- R. Deriche is Associate Editor of SIAM Journal on Imaging Sciences (SIIMS) and editorial board member at Springer for the book series entitled Computational Imaging and Vision.
- R. Deriche visited Athènes Univerity from May 20 to 27, 2012. This visit was performed within the framework of the exchange between Inria and Dept. Informatics, National University of Athens - (http://en.uoa.gr/ et http://www.di.uoa.gr/en/).
- R. Deriche gave a seminar (http://itmb.di.uoa.gr/research/res_seminEng.html) and a series of lectures on "Computational Brain Imaging" at University of Athens (http://en.uoa.gr) within the framework of the Master "Information Technologies in Medicine and Biology".
- R. Deriche gave an invited lecture at the "Biomedical Image Analysis Summer School" held in Paris from July 8 to 13, 2012.
- R. Deriche gave an invited talk at the Asilomar Conference on Signals, Systems, and Computers held November 4-7th, 2012.
- R. Deriche has served for many years as area-chair and/or as program committee member for International Conferences as ICCV, MICCAI, ECCV, CVPR, ISBI and national conferences as AFRIF-AFIA RFIA and serves several international journals and conferences (NeuroImage, IEEE Transactions on Medical Imaging, Magnetic Resonance in Medicine, JMIV, Medical Image Analysis Journal, ISBI, ISMRM, HBM..).
- R. Deriche has co-organised MICCAI 2012 Tutorial on Brain Connectivity Networks: Biology, Imaging and Beyond.
- R. Deriche has organised the "Computational diffusion MR imaging" session of the BASP: international biomedical and astronomical signal processing (BASP) Frontiers to be held in Villars-sur-Ollon (Jan. 27, Feb.1, 2013).
- M. Clerc serves on several local committees at Inria Sophia Antipolis: Bureau du Comité des Projets, MASTIC (diffusion) and Colloquium.
- M. Clerc is associated editor of Biomedical Engineering OnLine.
- M. Clerc serves on an evaluation committee for the ANR: “SIMI 3 - Matériels et logiciels pour les systèmes et les communications”.
- M. Clerc was on the organizing committee of the 18th International Conference on Biomagnetism, held in Paris, August 2012 (Biomag 2012). She also organized the mini-symposium on “dMRI, MEG & EEG fusion” at Biomag 2012.
- M. Clerc is a reviewer for conferences and journals (Biomedical Engineering OnLine, Human Brain Mapping, NeuroImage, Inverse Problems, Physics in Medicine iand Biology, IEEE Transations on Computational Intelligence and AI in Games, Computational and Mathematical Methods in Medicine, Paladyn. Journal of Behavioral Robotics).

- M. Clerc was invited to give a talk in the workshop Mouv' organized by DEFISENS "mission interdisciplinarité du CNRS".
- T. Papadopoulo served as a referee for the international conferences MICCAI 2012 and ISBI 2013. He is also area chair for the national conference GRETSI 2013. He is also in the program committe of ICVS 2013. In 2012, he has been reviewer for the journals Physics in Medicine and Biology. Image and Vision Computing, International Journal of Computer Vision, Annals of Biomedical Engineering, Clinical EEG & Neuroscience and SIAM Journal on Imaging Sciences.
- T. Papadopoulo has reviewed several ANR proposal.
- T. Papadopoulo (since september 2011) is the coordinator of the Master of Science in Computational Biology and Biomedicine from University of Nice Sophia Antipolis (Website: http://cbb.unice.fr). The scientific goal of this program is to focus on the human being from different perspectives (understanding and modeling functional aspects or interpreting biomedical signals from various devices) and at different scales (from molecules to organs and the whole organism).
- T. Papadopoulo is a member of the local (Sophia Antipolis) committees for software development (CDT) and for Sustainable development. He is also member of the piloting committee for the platform dtk.
- T. Papadopoulo is the Athena contact for the ADT MedInria-NT and the ANR MULTIMODEL.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master: R. Deriche, *Variational approaches and Geometrical Flows for Brain Imaging*, 36 ETD, M2 "Computational Biology and Biomedicine", University of Nice Sophia Antipolis, France.

Master: R. Deriche, *Computational Vision and Image Processing* 18 ETD, 3rd year Engineering School, Institut TELECOM / TELECOM SudParis, Evry, France.

Master: R. Deriche, *Computational Brain Imaging* 15 ETD, M2 "Information Technologies in Medicine and Biology", University of Athens, Greece (http://en.uoa.gr).

Master: M. Clerc and T. Papadopoulo, *Inverse Problems in Brain Functional Imaging*, 36 ETD, M2 "Computational Biology and Biomedicine", University of Nice Sophia Antipolis, France.

Master: T. Papadopoulo, *3D Computer Vision*, 36 ETD, M2, SSTIM/VIM/MAM5 option at Polytechnic Engineering School, University of Nice Sophia Antipolis, France.

Master: T. Papadopoulo, *Inverse problems for brain functional imaging*, 24 ETD, M2, Mathématiques, Vision et Apprentissage, ENS Cachan, France.

Doctorat: M. Clerc *Inverse Problems in Brain Imaging*, 6 ETD, OIPE Doctoral Course, Ghent University, Belgium.

8.2.2. Supervision

PhD: Joan Fruitet, Interfaces Cerveau-Machines basées sur l'imagination de mouvements brefs: vers des boutons contrôlés par la pensée, University of Nice Sophia Antipolis, July 4th, 2012.

PhD: Emmanuel Caruyer, Q-Space Diffusion MRI, Acquisition and Signal Processing, University of Nice Sophia Antipolis, July 18th, 2012.

PhD: Jian Cheng, Estimation and Processing of Ensemble Average Propagator and Its Features in Diffusion MRI, University of Nice Sophia Antipolis, May 30th, 2012.

PhD in progress: Sylvain Merlet, Compressed Sensing & dMRI, September 2010, Advisor: Rachid Deriche.

PhD in progress: Anne-Charlotte Philippe, MEEG & dMRI, September 2010, Advisors: Maureen Clerc & Rachid Deriche

PhD in progress: Sebastian Hitziger, MEEG signal processing, November 2011, Advisors: Théodore Papadopoulo & Maureen Clerc

PhD in progress: Romain Trachel, Real Time analysis of Visual Attention, October 2010, Advisors: Thomas Brochier & Maureen Clerc

PhD in progress: Gabriel Girard, fMRI & dMRI, September 2012, Advisors: Rachid Deriche & Maxime Descoteaux (University of Sherbrooke, CA).

PhD in progress: Thinhinane Megherbi, HARDI & High Order Tensors, September 2011, Advisors: Rachid Deriche & L. Boumghar (USTHB, Algiers)

8.2.3. Internships

Diana Ibanescu, "Inverse source reconstruction combining different sources of information", Master CBB, , from April 2nd to September 30th (Théodore Papadopoulo).

Laura Serron, "Perturbation methods in PDE to model electric conductivity inhomogeneities", from June 18th to September 17th (Maureen Clerc).

J. Treilhard, "Constrained Diffusion Kurtosis Imaging Using Ternary Quartics and MLE", Queen's University, Kingston (CA), from May to August 2012.

8.2.4. Juries

- Rachid Deriche served in the following PhD Juries as President, reviewer or member (Xavier Desquenses, Greyc Lab., Caen; Perrine Bertrand, University Paul Sabatier, Toulouse, Z. Ikri, Polytechnic School, Algiers; M.K Rajagopa, Telecom SudParis, Evry, Catherine Herold, UMPC & Télécom ParisTech, Paris).
- Maureen Clerc served in the following PhD Juries as reviewer: Emilie Villaron, LATP Aix-Marseille University; Sandra Rousseau, University Joseph Fourier, Grenoble; Alexandre Barachant, University Joseph Fourier, Grenoble) and was in the PhD advisory committee of Margaux Perrin (Lyon University).
- T. Papadopoulo served in the following Ph.D. committees as reviewer (S. Sockeel,), or member (J. Cheng, University of Nice-Sophia Antipolis and Institute of Automation, China and J. Fruitet, University of Nice-Sophia Antipolis).

8.3. Popularization

Maureen Clerc gave an invited talk at the "Art Science Pensée" conference in Mouans Sartoux, September 2012.

Maureen Clerc organized and participated in an event at Lycée Masséna, Nice, to promote scientific careers, for the 40th anniversary of women's admission to Ecole Polytechnique (September 2012).

CORTEX Project-Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Responsabilities

- Principal Investigator of MATHANA (A. Hutt)
- Member of the Board of Directors in Organization of Computation Neuroscience (A. Hutt)
- Member of the steering committee of the french association for Artificial Intelligence (AFIA) (F. Alexandre)
- Member of the board of directors of the LORIA laboratory (B. Girau).
- Head of the Complex systems and AI department of the LORIA laboratory (B. Girau)
- Member of the scientific culture commission (N. Rougier)
- Elected member of the laboratory council (N. Rougier)
- Member of the Comité du Développement Technologique (L. Bougrain)
- Member of the "Bureau du Comité de Projets" (Steering Committee of the Project-Team Committee) (F. Alexandre, until Aug 2012)
- F. Alexandre and T. Viéville are members (and moderators) of the scientific committee of NeuroComp, the initiative to gather the french community in Computational Neuroscience (annual conference and web site: http://www.neurocomp.fr/).

8.1.2. Review activities

- Reviewing for journals: Applied Intelligence, RIA, J. Physiol. (F. Alexandre), Physica A, Physical Review E, Physical Review Letters, Neuroimage, Cognitive Neurodynamics, J. Biological Physics, Mathematical Neuroscience, Philosophical Transactions of the Royal Society A (A. Hutt)
- Reviewing for journals: Applied Intelligence, RIA, J. Physiol. (F. Alexandre), Physical Review Letters, Neuroimage, Cognitive Neurodynamics, Mathematical Neuroscience (A. Hutt)
- Member of program committees: Reconfig (B. Girau), CAP (L. Bougrain, F. Alexandre)
- Reviewing (A. Hutt) for the NWO (Science Foundation Netherlands), the ANR and several french regional and territorial agencies (F. Alexandre)

8.1.3. Workshops, conferences and seminars

- Organization of the NeuroComp/KEOpS'12 workshop, Beyond the retina: from computational models to outcomes in bioengineering. Focus on architecture and dynamics sustaining information flows in the visuomotor system. Bordeaux, October the 10th and 11th (F. Alexandre and T. Viéville). http://www.neurocomp.fr/neurocomp-2012
- Co-organization of the "Robots et corps" conference, 18/10/2012, Nancy (N. Rougier)
- Co-organization of CAP'12, French conference on Machine Learning, 23-25/05/2012, Nancy (L. Bougrain)
- Invited speaker and project leader on "Inverse reinforcement learning for a brain-computer interfaces driven robotic arm control", 8th International Summer Workshop on Multimodal Interfaces, eNTERFACE 2012, 02-27/07/2012, Metz (L. Bougrain)
- Invited speaker on "Brain-Machines Interfaces", "Robots et corps" conference, 18/10/2012, Nancy (L. Bougrain)

- Speaker on "Brain-computer interfaces", meeting on ICT for autonomy during the Autonomic event, 18-19/10/2012, Metz (L. Bougrain)
- Exhibitor on Neuroprosthetics for the Inria Industry meeting on Numerical Simulation for Healthcare and Wellbeing, 21/11/2012, Strasbourg (L. Bougrain)

8.1.4. International cooperations

- in neurophysiology with MPI for Biological Cybernetics (Tubingen)
- in general anaesthesia with University of Auckland (New Zealand)
- on modeling visual attention with university of Chemnitz (Germany)
- in brain-computer interface with the Universidad Autónoma Metropolitana (UAM, Mexico)
- in spike sorting with university of Princeton (USA)

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Many courses are given in universities and schools of engineers at different levels (LMD) by most team members, in computer science, in applied mathematics and in cognitive science. Moreover, several members of the team are implied in various kinds of academic responsibilities: Laurent Bougrain is responsible for the relations of the Master In Computer Science with professional partners, Bernard Girau is head of the RAR speciality of this Master, and member of the Conseil de Collegium Science et Technologie of the University of Lorraine

8.3. Popularization

- The other half-time of Thierry Viéville's activity is dedicated to popularization of science (http://science-info-lycee.fr, http://interstices.info) with about 10 conferences and 20 days of scientific animation.
- Organization of a talk series on Image, Perception, Action & Cognition on a montly basis at the Inria-Nancy Grand Est laboratory (http://ipac.loria.fr/, Y. Boniface, N. Rougier).
- Participation to *Les cafés des sciences et techniques*, "Les Robots, le futur... demain ?" 22/11/2012, Epinal (N. Rougier)
- Participation to *Festival du film du chercheur*, 10/06/2012, Nancy (N. Rougier, L. Bougrain)
- Talk on Neuroprosthetics for the Science's day 2012 at Jules Ferry's school, 11/11/2012, Vandoeuvre-lès-Nancy (L. Bougrain)

DEMAR Project-Team

9. Dissemination

9.1. Scientific Animation

+ D. Guiraud
  1. Associate editor for Journal of Neural Eng. and EMBC'12 conference
  2. Member of the steering committee of "Institut des Technologies pour la Santé"
  3. Chair of the Labex Numev "Aide à la personne malade et déficiente" specific action
+ C. Azevedo-Coste
  1. Board member of IFESS society (international functional electrical stimulation society)
  2. Associate Editor of Paladyn Behavioral Robotics Journal
+ D. Andreu
  1. Co-organizer of the french working group on Control Architectures of Robots of the french GdR Robotique
  2. assitant manager of the Robotic Department (LIRMM)
+ F. Soulier
  - Local coordinator of the Belem (BioElectronics for Medical Engineering) intensive programme for the University of Montpellier 2. Belem is funded by the European Community in the framework of the Erasmus programme.
  - Publication chair and the "parallel-session" supervisor at DCIS'12 (27^{th} conference on Design of Circuits and Integrated Systems) that includes a session on biomedical application and a special session on biomedical systems and devices.
  - Organizing commitee of the workshop "Systèmes Embarqués pour la Santé" that takes place in Paris in December, the 6^{th} and 7^{th} 2012. The workshop is part of the CNRS's DEFI-SENS inter-disciplinary initiative on sensory deficiencies and personalized supplementation.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- **UE "medical robotics"** from Institut Telecom / Mines specialisation "Tic santé". David Guiraud teaches the basics of neurophysiology and neuroprosthetics about 10h per year.
- **UE "neuroprotheses"** master 1 & 2 "Tic et santé" and master 2 Human Movement Sciences. David Guiraud teaches muscle function, modeling and the basics for the control through FES and neuroprosthesis about 20h per year.
- **collège de France** june 2012 about neuroprosthesis during a dedicated day to "medical robotics" organized by Jean Paul Laumond.
- **Summer school Université d'Aalborg** "Fourth Annual Aalborg Symposium on The Advances in Neurophysiology and Neural Rehabilitation Engineering of Movement " 11-12 juin 2012, talk about neuroprotheses. https://smi.hst.aau.dk/events/anres2012.
- David Andreu, Associate Professor, 200h/y, Engineering school Polytech Montpellier and Master degree, Software engineering, real time OS, discrete event systems, networks, neuroprosthesis.
- Christine Azevedo-Coste, University of Montpellier, Master STIC pour la Sante, Neuroprotheses II, Neurophysiology, 6h/y.

- Christine Azevedo-Coste, University of Montpellier, Master STIC pour la Sante, Neuroprotheses I, Neurophysiology, 1,5h/y.
- Christine Azevedo-Coste, Institut Telecom, Neurophysiology, 1,5h/y.
- Mitsuhiro Hayashibe, University of Montpellier, Master STIC pour la Sante, NeuroprothesesII, EMG signal processing and its use for rehabilitation, 3h/y.
- Mitsuhiro Hayashibe, University of Montpellier, Master STIC pour la Sante, Modele et Regulation, Identification and Control in Biomechanics, 4.5h/y.
- Fabien Soulier, assistant professor at Polytech' Montpellier (ERII) teaching electronics and signal processing.

9.2.2. Thesis Defenses

1. Christine Azevedo-Coste, Philippe Fraisse and Charles Fattal supervise **Jovana Jovic**, *Vers une assistance fonctionnelle du transfert et de la posture chez le sujet paraplégique sous électrostimulation : de la simulation a l'expérimentation.* defended on 26th Oct. in Montpellier.
2. Guy Cathébras and Fabien Soulier supervise **Olivier Rossel**, *Dispositifs de mesure et d'interprétation de l'activité d'un nerf.* defended on 26th Nov. in Montpellier.
3. Jérôme Bourien (INM, Montpellier) and Christine Azevedo-Coste supervise **Christophe Michel**, *Modélisation de l'efférence latérale du système auditif périphérique.* defended on 13th Dec. in Montpellier.

9.2.3. Ongoing theses

1. Christine Azevedo-Coste and Bernard Espiau supervise **Maud Pasquier**, *Observation et contrôle de mouvements non cycliques des membres inférieurs et supérieurs en assistance fonctionnelle.*, ANM.
2. David Andreu and Karen Godary supervise **Hélène Leroux**, *Abstraction et composition pour la conception formelle de neuroprothèses*, Thesis ENS, 2011-2014.
3. David Guiraud and David Andreu supervise **Guillaume Coppey**, *Unité implantable de mesure répartie pour suppléance fonctionnelle en boucle fermée*, Thesis CIFRE MXM, 2011-2014.
4. Mitsuhiro Hayashibe and Philippe Fraisse supervise **Alejandro González**, *Closed-loop whole body posture control and stability analysis in FES.*, European Comission:CORDIS, 2011-2014.
5. Mitsuhiro Hayashibe, Benjamin Gilles and David Guiraud supervise **Yacine Berranen**, *Volumetric musculoskeletal modeling and simulation.*, CNRS Handicap, 2011-2014.
6. Mitsuhiro Hayashibe and David Guiraud supervise **Zhan Li**, *Computational rehabilitation and neuromuscular control based on reinforcement learning.*, China Scholarship Council (CSC), 2011-2014.
7. Philippe Fraisse supervises **Nahema Khadija Sylla**, *Contribution à l'assistance au geste au travail : Une approche ergonomique intégrée.*, Thesis CIFRE DEMAR/PSA, 2012-2015.
8. Guy Cathébras, Fabien Soulier and Serge Bernard supervise **Mariam Abdallah**, *Système d'acquisition de signaux bioélectriques multicanal, programmable et implantable.*, Thesis MENRT, 2012-2015.
9. P. Fraisse, C. Azevedo Coste, I. Laffont (CHRU Montpellier, M2H, Euromov, UM1), D. Mottet (M2H, Euromov, UM1) supervise **Nader Rouis**, *Étude et développement de méthodes de rééducation du membre supérieur assistées par stimulation électrique fonctionnelle.*, Thesis NUMEV UM2, 2012-2015.

9.2.4. PostDoc

- Christine Azevedo Coste, David Guiraud and David Andreu supervise Pawel Maciejasz, "Selective neural electo-stimulation" (TIME project).

- François Bonneblanc and Hugues Duffau supervise Pom Charras, "The validation on pre, post and intra-operative evaluations of patients during awake neurosurgeries of slow-growing tumors in the brain", contract Association pour la Recherche sur le Cancer (ARC-France) 'subvention-libre N°3184', post-doctoral fellowship.
- Benjamin Gilles and Mitsuhiro Hayashibe supervise Maxime Tournier, "Constraint-based simulation of the musculoskeletal system" (ANR SoHuSim project).

9.2.5. Internships

- David Guiraud and Pawel Maciejasz supervised Thomas Guiho on "Proposing and implementing the algorithm forautomated detection and classification of action potentials in nerve fiber based on multichannel recordings", Master student project and afterwards 3 month training, from Oct. 2011 to Jun. 2012.
- David Andreu supervised Ronald Reboul on "Prototypage d'un séquenceur embarqué au sein d'un implant de stimulation", Engineer final internship, from Apr. 2012 to Sep. 2012.
- David Andreu supervised Jean-François Happe on "Etude de stratégies d'économie d'énergie pour implant de stimulation", Engineer final internship, from Apr. 2012 to Sep. 2012.
- David Andreu supervised Quinchuan Mo on "Traduction automatique de Réseau de Petri en VHDL : optimisation du code en termes de consommation et de surface", Projet Industriel de Fin d'Etudes (engineer final year project), from Sep. 2012 to Feb. 2013.
- David Andreu supervised Yuchen He on "Conception et développement d'un logiciel d'exploitation d'une plateforme de mesure de consommation d'un implant médical", Projet Industriel de Fin d'Etudes (engineer final year project), from Sep. 2012 to Feb. 2013.
- David Andreu supervised Julien Serodes on "Etude de l'architecture numérique basée composants d'un implant médical et de son impact sur la consommation", Projet Industriel de Fin d'Etudes (engineer final year project), from Sep. 2012 to Feb. 2013.
- David Guiraud, Christine Azevedo, Charles Fattal supervised Tigra WAFA on "Implanted electrical stimulation of upper limb in tetraplegic patients", Projet Master 2 TIC SANTÉ, from Oct. 2012 to Jan. 2013.
- David Guiraud, Christine Azevedo, Luc Bauchet, Charles Fattal supervised Thomas GUIHO on "Epidural functional electrical stimulation", Projet Master 2 TIC SANTÉ, from Oct. 2012 to Jan. 2013.

9.2.6. Contract Engineers

- David Andreu supervises Grégory Angles. "Conception et réalisation d'un environnement logiciel, basé sur Eclipse, pour le prototypage rapide sur composants électroniques programmables (HILECOP)". Computer Science Engineer, Babylone contract (3 years contract, Inria).
- David Andreu supervises Guillaume Magro. "Spécification et prototypage d'un contrôleur de SEF implantable". Industrial Informatics Engineer, Inria Expert Engineer contract (3 years contract, Inria).
- Guy Cathébras, Serge Bernard and Fabien Soulier co-supervise Jérémy Salles "Correction de la version 2 et développement de la version 3 de l'ASIC de stimulation 12 pôles" Microelectronics Design Engineer (1 year contract, NEUROCOM financial support).

GALEN Team

9. Dissemination

9.1. Scientific Animation

- **Andreas Argyriou**
  - **Conference Committee:** International Conference on Machine Learning (ICML), Neural Information Processing Systems (NIPS), Workshop on Optimization for Machine Learning (in NIPS).
  - **Invited Seminars/Presentations:** Télécom ParisTech - FR, École des Mines de Paris - FR, Imperial College - UK, Queen Mary University London - UK.
- **Matthew Blaschko**
  - **Conference Committee:** International Conference on Robotics and Automation (ICRA), British Machine Vision Conference (BMVC - area chair), Asian Conference on Computer Vision (ACCV), Neural Information Processing Systems (NIPS), Medical Image Computing and Computer Assisted Intervention (MICCAI), Medical Computer Vision Workshop (at MICCAI), European Conference on Computer Vision (ECCV)
  - **Journal Reviewing Services:** Journal of Machine Learning Research, International Journal of Computer Vision, IEEE Transactions on Pattern Analysis and Machine Intelligence, Computer Vision and Image Understanding
  - **Invited Seminars/Presentations:** Katholieke Universiteit Leuven - BE, Stanford University - USA, Google - Mountain View, Institute of Science and Technology - Austria, Johns Hopkins University - USA, Schlumberger - Paris - FR, Ecole Normale Superieure - FR.
- **Iasonas Kokkinos**
  - **Editorial Activities:** Image and Vision Computing Journal.
  - **Conference Committee:** IEEE International Conference on Computer Vision (CVPR - area chair), Perceptual Organization in Computer Vision (POCV - organizer) , Asian Conference on Computer Vision (ACCV), ACCV workshop on Detection and Tracking in Challenging Environments.
  - **Journal Reviewing Services:** IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, Computer Vision and Image Understanding, SIAM Journal on Imaging Sciences, EURASIP Journal on Image and Video Processing.
  - **Invited Seminars/Presentations:** Ecole Normale Superieure - FR, Carnegie Mellon University - USA, Johns Hopkins University - USA, Schlumberger - Paris - FR, National Technical University of Athens - GR.
- **Pawan Kumar**
  - **Conference Committee**: IEEE Conference on Computer Vision and Pattern Recognition (ICCV), European Conference on Computer Vision (ECCV), Advances in Neural Information Processing Systems (NIPS).
  - **Journal Reviewing Services**: IEEE Transactions on Pattern Analysis and Machine Intelligence, Journal of Machine Learning Research.
  - **Workshop and Tutorials Organization**: European Signal Processing Conference tutorial on *Learning with Inference for Discrete Graphical Models*, Biomedical Image Analysis Summer School.

  - **Invited Seminars/Presentations**: University of Cambridge - UK, University of Oxford - UK, Institute of Science and Technology - AT, University of Heidelberg - DE, Stanford University - USA.

- **Nikos Paragios**
  - **Editorial Activities:** IEEE Transactions on Pattern Analysis and Machine Intelligence, International Journal of Computer Vision, Medical Image Analysis, Computer Vision and Image Understanding, Image and Vision Computing Journal, Machine Vision and Applications, SIAM Journal in Imaging Sciences.
  - **Conference Committee:** IEEE International Conference in Computer Vision (CVPR), IEEE Computer Vision and Pattern Recognition (ICPR - area chair), Medical Image Computing and Computer Assisted Intervention (MICCAI - area chair), IEEE International Symposium on Biomedical Imaging (ISBI), International Symposium on Visual Computing (ISVC), International Conference on Functional Imaging and Modeling of the Heart (FIMH), Medical Computer Vision Workshop (at MICCAI).
  - **Workshop and Tutorials Organization**: European Signal Processing Conference tutorial on *Learning with Inference for Discrete Graphical Models*, Biomedical Image Analysis Summer School.
  - **Journal Reviewing Services:** IEEE Transactions on Medical Imaging.
  - **Invited Seminars/Presentations**: University of Pennsylvania- USA, Stony-Brook University - USA, Clermont-Ferrand University - FR, IEEE International Symposium on Biomedical Imaging (ISBI) - ES, Medical Computer Vision Workshop (MICCAI) - FR, Centre Oscar Lambret - FR.
  - **Distinctions:** Member of the SAFRAN Conglomerate Scientific Council.

9.2. Teaching - Supervision - Committees

Participants: Matthew Blaschko, Iasonas Kokkinos, Pawan Kumar, Nikos Paragios.

9.2.1. Teaching

Master : Structure Prediction, 24, M1, Ecole Centrale de Paris [M. Blaschko]

Master : Discrete Optimization, 12, M1, Ecole Centrale de Paris [P. Kumar]

Master : Signal Processing, 36, M1, Ecole Centrale de Paris, France [I. Kokkinos]

Master : Computer Vision, 36, M1, Ecole Centrale de Paris, France [I. Kokkinos]

Master : Pattern Recognition, 24, M2, Ecole Centrale de Paris/Ecole Normale Superieure-Cachan, France [I. Kokkinos]

Master : Advanced Mathematical Models in Computer Vision, 24, M2, Ecole Centrale de Paris/Ecole Normale Superieure-Cachan, France [N. Paragios]

N. Paragios is in charge of the option Medical Imaging, Machine Learning and Computer Vision at the Department of Applied Mathematics of Ecole Centrale de Paris. This option consists of 7 classes in the above mentioned fields, 180 hours of teaching and is also directing the associated M.Sc. (M2) program of the ENS-Cachan in Applied Mathematics, Machine Learning and Computer Vision at Ecole Centrale de Paris.

9.2.2. Supervision

PhD in progress : Stavros Alchatzidis, "Message Passing Methods, Parallel Architectures & Visual Processing", 2011-2014, Nikos Paragios (supervisor)

PhD in progress : Pierre-Yves Baudin, "Knowledge-based Segmentation of the Human Skeletal Muscle through Learning & Inference of Randon Walks", 2009-2013, Nikos Paragios & Pierre Carlier (supervisors)

PhD in progress : Xiang Bo, "Pose-Invariant Knowledge-based Segmentation with Higher Order Graphs", 2009-2013, Nikos Paragios (supervisor)

PhD in progress : Haithem Boussaid, "Learning-based mid-level processing for computer vision and medical imaging", 2010-2014, Iasonas Kokkinos (supervisor)

PhD in progress : Enzo Ferrante, "2D-to-3D Multi-Modal Deformable Image Fusion", 2012-2015, Nikos Paragios (supervisor)

PhD in progress : Vivien Fecamp, "Linear-Deformable Multi-Modal Deformable Image Fusion", 2012-2015, Nikos Paragios (supervisor)

PhD in progress : Katerina Gkirtzou, "Kernels, Machine Learning & Biomedical Imaging-driven Computational Anatomy", 2009-2013, Nikos Paragios (supervisor)

PhD in progress : Nicolas Honnorat, "Detection, Segmentation & Tracking of Guide-Wires in Interventional Imaging", 2009-2013, Nikos Paragios (supervisor)

PhD in progress : Puneet Kumar, "Weakly Supervised Learning for Object Detection and Semantic Segmentation", 2010-2013, Pawan Kumar (supervisor)

PhD in progress : Helene Langet, "Sampling and Motion Reconstruction in Three-dimensional X-Ray Interventional Imaging", 2010-2013, Gilles Fleury & Nikos Paragios (supervisors)

PhD in progress : Fabrice Michel, "Metric Learning & Mono/Multi-modal Data Fusion", 2009-2013, Nikos Paragios (supervisor)

PhD in progress : Sarah Parisot, "Graph-based Detection, Characterization & Segmentation of Brain Tumors", 2010-2013, Nikos Paragios (supervisor)

PhD in progress : Stavros Tsogkas, "Learning-based mid-level processing for computer vision and medical imaging", 2011-2014, Iasonas Kokkinos (supervisor)

9.2.3. Committees

Nikos Paragios: Emannuel Caruyer (Reviewer - University of Nice-Sophia Antipolis), Yangming Ou (external member - University of Pennsylvania), Karima Ouji (Chair - Ecole Centrale de Lyon), Olivier Whyte (Chair - ENS-Cachan), Xiang Zheng (external member - StonyBrook University)

MNEMOSYNE Team

8. Dissemination

8.1. Scientific Animation

8.1.1. Responsabilities

- F. Alexandre and T. Viéville are members (and moderators) of the scientific committee of NeuroComp, the initiative to gather the french community in Computational Neuroscience (annual conference and web site: http://www.neurocomp.fr/).

8.1.2. Review activities

- Reviewing for journals: Applied Intelligence, Cognitive Computation, J. Physiol. (F. Alexandre)
- Member of program committees of conferences: AMINA, CAP, CWPR, JCIB, SAB, TAIMA (F. Alexandre)
- Reviewing for the Fonds Recherche Quebec, the CNRS, the ANR and several french regional and territorial agencies (F. Alexandre)

8.1.3. Workshops, conferences and seminars

Organization of conferences and workshops:

- Robots & Corps, Conférence ARCO / IPAC, 18/10/2012 (N. Rougier)
- EuroScipy 2012, Brussels, Belgium (N. Rougier)
- Organization of the The NeuroComp/KEOpS'12 workshop, Beyond the retina: from computational models to outcomes in bioengineering. Focus on architecture and dynamics sustaining information flows in the visuomotor system. Bordeaux, October the 10th and 11th (F. Alexandre and T. Viéville). http://www.neurocomp.fr/neurocomp-2012
- Invited Talks given to the IPAC Seminar (Nancy), to the Annual Forum in Cognitive Science at University of Nancy, to the Seminar Bordeaux Neuroscience, to the second French-Chinese workshop on Network Dynamics and Synaptic Plasticity in the Central Nervous System (F. Alexandre).

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Many courses are given in universities and schools of engineers at different levels (LMD) by most team members, in computer science, in applied mathematics, in neuroscience and in cognitive science.

F. Alexandre has given a lecture to the Master/Doctorate program in Neuroscience, University of Valparaiso.

N. Rougier has given this year a tutorial on scientific visualization at Euroscipy 2012, Brussels.

8.2.2. Juries

We also participate to many juries each year.

8.3. Popularization

We have a strong activity for popularization of science:

- The other half-time of Thierry Viéville's activity is dedicated to popularization of science (http://science-info-lycee.fr, http://www.inria.fr/mecsci, http://interstices.info) with about 10 conferences and 20 days of scientific animation [8], [7].
- "Les Robots, le futur... demain ?", Les cafés des sciences et techniques, Bibliothèque Intercommunale, Epinal, 22 novembre 2012 (N. Rougier)
- Meeting with the general public for the national scientific film festival, Nancy, 2012 (N. Rougier)
- Exchange with a scientific journalist (5 days in Nancy, 5 days in Paris), 2012 (N. Rougier)

NEUROMATHCOMP Project-Team

7. Dissemination

7.1. Scientific Animation

Bruno Cessac was a member of the program committee of the conference Neurocomp-KEOPS 2012. He is a reviewer for the CONYCIT (Chile) and COFECUB (Brasil) program and for the journals Physica D, Nonlinearity, Chaos, Journal of Statistical Physics, IEEE Transaction in Neural Networks, Journal of Mathematical Biology, Journal of Computational Neuroscience. He is in charge of internships organisation in the Master of Computational Biology, Nice.

Pascal Chossat is deputy scientific director of INSMI, the newly created mathematics institute of CNRS, in charge of the international relations of CNRS in this field. He is the coordinator of a geographic EraNet (EC program) named New Indigo for the development of scientific networks between European member states and India.

Olivier Faugeras is a member of the French Academy of Sciences and the French Academy of Technology. He is on the Editorial board of the International Journal of Computer Vision (IJCV). He is the co-editor in chief of the Journal of Mathematical neuroscience, Springer: Website: http://www.mathematical-neuroscience.com/ He is a member of the Institut Thématique Multi-organismes Neurosciences, Sciences cognitives, Neurologie, Psychiatrie. He is a member of the ERC PE1 panel. He co-organized a thematic semester at CIRM, Luminy, France, October-December 2011, on “Theoretical, Mathematical and Computational Neuroscience” which featured four one-week workshops and six one-week courses. For more information see Website: http://www-sop.inria.fr/manifestations/SemesterCirm/.

Pierre Kornprobst was a member of the program committee of the conference ICPR 2012. He co-organised with Olivier Faugeras the Workshop on Biological and Computer Vision Interface which was selected as a satellite event of ECCV 2012 (Website: http://www-sop.inria.fr/manifestations/wbcvi2012). He co-edited with Frédéric Cazals the book entitled "*Modeling in Computational Biology and Medicine: A Multidisciplinary Endeavor*” [56], which illustrates the program taught in the Master of Science in Computational Biology (Website: http://cbb.unice.fr) that they launched in 2009.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Licence 1 : Grégory Faye, *Mathematics for Biology*, 50h, L1, Université Nice Sophia Antipolis, France.

Licence 1 : Massimiliano Muratori, TP de physique, 45 h, L1, Ecole d’ingénieurs Polytech.

Licence 2 : Rodrigo Cofre, Traitement du signal, 50h, L2, Université Nice Sophia Antipolis, France.

Licence 2, Massimiliano Muratori, TD d’électromagnetisme , 18h, L2, Ecole d’ingénieurs Polytech.

Licence 3 : Hassan Nasser, Electronique numérique, 36h, L3, Université Nice Sophia Antipolis, France

License 3 : Hassan Nasser, Microprocesseurs, 28h, L3, Université Nice Sophia Antipolis, France

Master 2: Bruno Cessac, *Neuronal dynamics*, 36 hours, Master of Computational Biology and Biomedicine, Université Nice Sophia Antipolis, France.

Master 2: Olivier Faugeras, *Mathematical Methods for Neuroscience*, 27h, M2, ENS Paris, France.

7.2.2. Supervision

PhD & HdR

PhD : Grégory Faye, “Symmetry breaking and pattern formation in neural field equations”, 2012, supervised by Pascal Chossat and Olivier Faugeras.

PhD in progress: Diego Fasoli, “Mean-field theory of realistic spiking neurons”, Université Nice Sophia Antipolis, defence planned in 2013, supervised by Olivier Faugeras.

PhD: Geoffroy Hermann, “Some mean field equations in neuroscience”, 2012, supervised by Olivier Faugeras and Jonathan Touboul.

PhD : Khaled Masmoudi, Retina-inspired image coding schemes, Université Nice Sophia Antipolis, October 15, 2012, supervised by Marc Antonini (I3S, CNRS) and Pierre Kornprobst.

Phd in progress: Javier Baladron, “Parallel implementations of mean field and neural field equations”, Université Nice Sophia Antipolis, defence planned in 2013, supervised by Olivier Faugeras.

PhD in progress: Hassan Nasser, « Reproducing and anticipating retinal responses», defence planned in 2013, supervised by Bruno Cessac .

PhD in progress: Rodrigo Cofre-Torres, «Statistics of spike trains and neuronals structures», defense planned in 2014, supervised by Bruno Cessac.

PhD in progress: Massimiliano Muratori, « Mean field equations for neural networks and synaptic correlations», defence planned in 2015, supervised by Bruno Cessac .

7.2.3. Juries

Bruno Cessac. Reviewer of Damien Landon’s Thesis, “Perturbation et excitabilité dans des modèles de propagation de l’influx nerveux”, Orléans, 28-06-12.

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PARIETAL Project-Team

8. Dissemination

8.1. Scientific Animation

- B. Thirion acts as reviewers for Medical Image Analysis, IEEE Transactions on Medical Imaging, NeuroImage, ISBI, IPMI, as associate editor for Frontiers in Neuroscience Methods, as program committee for the MICCAI 2012 conference and as expert for ANR, NWO.
- B.Thirion set up the following workshop at the OHBM 2012 conference: *Why believe in Multivariate Pattern Analysis ? The skeptical Neuroimager's view.* G. Varoquaux was part of it. B.Thirion organized a session entitled *Comprendre le cerveau par le signal et l'image* at the Digiteo forum.
- B. Thirion gave an invited presentation at the ISBI 2012, CompImage 2012, the FENS 2012 workshop on brain activity decoding, MICCAI 2012 workshop on functional connectivity and at the MLINI 2012 workshop, at the *Institut de biologie du Collège de France*, Paris and at the *Institute of Psychiatry*, London.
- G. Varoquaux gave a tutorial on the use of Python in Machine learning at the PRNI 2012 conference.
- G. Varoquaux was program committee of Euroscipy 2012, PyHPC 2012 and ESCO 2012.
- G. Varoquaux acts as reviewer for NeuroImage, HBM, MedIA, TMI, Frontiers in NeuroInformatics et Frontiers in Brain Imaging methods, Review editor for Frontiers in NeuroInformatics and Frontiers in Brain Imaging methods and as expert for ANR and Agoranov.
- Alexandre Gramfort is Program committee PRNI, Associate editor IEEE EMBC conference and Associate editor Frontiers in brain imaging methods.
- Alexandre Gramfort acts as reviewer for Neuroimage, IEEE TMI, brain topography, HBM journal, PLOS ONE, brain connectivity, journal of clinical neurophysiology, MICCAI, physics in medicine and biology
- Alexandre Gramfort took part to the *Inria-Clinatec* days at Grenoble.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master: MVA, Bertrand Thirion + Alexandre Gramfort, Imagerie fonctionnelle cérébrale et interface cerveau machine, 12h + 3h, M2, ENS Cachan, France.

Master biostatistiques: Bertrand Thirion, cours de biostatistique computationnelle, 6h, M2, Paris XI, France.

PhD: Gaël Varoquaux taught Python (8h at Inria Saclay, 8h at Inria Grenoble, 4h at Expresso summer school).

Master: master Telecom ParisTech UE ACIMED, Alexandre Gramfort tought MEG + fMRI 4h30, M2, Telecom ParisTech, Paris, France

8.2.2. Juries

Bertrand Thirion was part of the PhD committee of

- Peter Rasmussen, DTU, Denmark on April 11th. The PhD thesis was entitled *Mathematical modeling and visualization of functional neuroimages*.
- Archana Venkataraman, MIOT/CSAIL, USA on June 26th. The PhD thesis was entitled *Generative Models of Brain Connectivity for Population Studies*.
- Mikael Naveau, Cyceron, Caen, France on November 5th. The PhD thesis was entitled *Connectivité fonctionnelle cérébrale pendant l'état de repos: modélisation multi-échelle*.

8.3. Popularization

Alexandre Gramfort was shot in the *E=M6* TV program, in which Marc lesguy took part to the so-called word decoding experiment.

Parietal animated the Inria stand at Fête de la science days, Moulon Saclay, during 3 days (October 12-14), where we presented a nice game designed by Virgile Fritsch to illustrate our research activities.

SHACRA Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Journals, Conferences, Workshop

- **Jérémie Dequidt** has been reviewer for the following conference and journal:
  - Medical Image Computing and Computer Assisted Intervention (MICCAI)
  - Transaction on Medical Imaging (TMI)
  - Computer Methods and Programs in Biomedicine (CMPB)
- **Christian Duriez** has been reviewer for the following conference and journals:
  - Computer Methods in Applied Mechanics and Engineering (CMAME),
  - Computer Methods and Programs in Biomedicine (CMPB),
  - IEEE Transaction on Medical Imaging (TMI),
  - IEEE Transactions on Biomedical Engineering (TBME-EMBS)
  - IEEE Transaction on Haptics (ToH),
  - Proceedings of IEEE,
  - Computer and Graphics,
  - Eurographics 2012,
  - Eurohaptics 2012,
  - Internaltional Conference on Control, Automation, Robotic and Vision (ICARCV 2012),
  - IEEE Virtual Reality Conference (VR 2012),
  - Medical Image Computing and Computer Assisted Intervention (MICCAI 2012)

  member of the following committees:
  - Associate Editor of WorldHaptic Conference 2013
- **Jérémie Allard** has been member of the following committees:
  - Workshop on Virtual Reality Interaction and Physical Simulation (VRIPHYS)

  and reviewer for the following conference and journal:
  - SIGGRAPH
  - Computers & Graphics

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Jeremie Dequidt, Programming, 48h, L3, Polytech'Lille, France
Licence: Jeremie Dequidt, Database, 12h, L3, Polytech'Lille, France
Licence: Jeremie Dequidt, Advanced Programming, 6h, L3, Polytech'Lille, France
Licence: Jeremie Dequidt, Hardware, 31h, L3, Polytech'Lille, France
Licence: Jeremie Dequidt, Unix Systems, 24h, L3, Polytech'Lille, France
Licence: Jeremie Dequidt, Numerical Analysis, 30h, L3, Polytech'Lille, France
Master: Jeremie Dequidt, 3D Modeling, 5h, M2, Polytech'Lille, France

Licence: Alexandre Bilger, Programming, 48h, L1, Université Lille 1, France

Master: Alexandre Bilger, Programming, 14h, L1, Polytech'Lille, France

Licence: Alexandre Bilger, Data Encoding, 32h, L1, Université Lille 1, France

Licence: Nazim Haouchine, Programming, 22h, L3, Polytech'Lille, France

Licence: Nazim Haouchine, Database, 36h, L3, Polytech'Lille, France

Licence: Ahmed Yureidini, Database, 32h, L1, Université de Lorraine, France

Licence: Ahmed Yureidini, Programming, 36h, L1, Université de Lorraine, France

Licence: Ahmed Yureidini, Hardware Architecture, 36h, L1, Université de Lorraine, France

9.2.2. Supervision

PhD & HdR :

PhD: **Yiyi Wei**, Discrete Exterior Calculus Approach for Aneurysm Related Simulation, USTL, 23/03/2012, **Stéphane Cotin and Songde Ma**

PhD in progress : **Ahmed Yureidini**, Modélisation d'organes par fonctions implicites, 2009, **Stéphane Cotin and Erwan Kerrien**

PhD in progress : **Hugo Talbot**, Real-time simulation of cardiac ablation in the framework of arrhythmia, 2010, **Stéphane Cotin and Hervé Delingette**

PhD in progress : **Vincent Majorczyk**, Simulation de Fluide GPU, 2010, **Stéphane Cotin and Jérémie Allard**

PhD in progress : **Guillaume Kazmitcheff**, Modélisation et simulation d'interventions chirurgicales sur l'oreille moyenne, 2011, **Stéphane Cotin and Christian Duriez**

PhD in progress : **Alexandre Bilger**, Biomecanical simulation for Deep Brain Stimulation, 2011, **Stéphane Cotin and Christian Duriez**

PhD in progress : **Zhifan Jiang**, Recalage d'images déformables pour la biomécanique, 2011, **Stéphane Cotin, Jérémie Dequidt, Mathias Brieu**

PhD in progress : **Tomas Golembiovsky**, Modèles déformables adaptatifs pour la simulation de structures creuses, 2011, **Stéphane Cotin, Ludek Matyska, Christian Duriez**

PhD in progress : **Julien Bosman**, Simulations à base de particules et interactions multi-physiques en temps-réel, 2011, **Stéphane Cotin and Christian Duriez**

PhD in progress : **Mouhamadou Diallo**,Modélisation biomécanique du prolapsus génital, 2011, **Mathias Brieu, Pauline Lecomte, Christian Duriez**

PhD in progress : **Nazim Haouchine**, Augmented Reality Tools for Minimally Invasive Hepatic Surgery, 2012, **Stéphane Cotin, Marie-Odile Berger, Jérémie Dequidt**

PhD in progress : **Francois Dervaux**, Image driven simulation for interventional radiology procedures, 2012, **Stéphane Cotin, Jérémie Dequidt, Erwan Kerrien**

9.2.3. Juries

- **Jérémie Allard** was in the examination committee of :
  - Guillaume Bousquet, October 2012, University of Grenoble

9.3. Popularization

During this year, team researchers and students animated several scientific events. The different scientific animations are listed below:

- MICCAI 2012: some of the team students helped for the organization of the MICCAI conference that occurred in October in Nice,

- Futur en Seine: a scientific exhibition took place in Paris (in the 104 building) the 16th and 17th June 2012 and was a public event. Researchers and students presented demonstration videos done using SOFA during the whole week-end.
- Recontre Inria-Industrie: this was a public event taking place in Strasbourg the 21st of November 2012. Researchers and students presented demonstration videos done using SOFA during the whole week-end.
- Hugo Talbot did a visit in the "Humanoids and Intelligence Systems" laboratory at the Karlsruhe Institute for Technology and presented his Ph.D. work at this occasion.
- Unithe ou Cafe: this is a vulgarization event at Inria presenting the research work done by Inria teams and is dedicated to all employees. Hugo Talbot presented his Ph.D. work during a session called "La cardiologie au coeur du numerique".
- Sofa Training Days Grenoble 2012: this is a 5 days-learning session held in october, with more than 20 attendees (researchers, ingeneers...). Various topics were presented by several members of the team.
- Some high school students have spent a week in the team and have been interested on topics related to Medical Simulation and in a large view to scientific researches.

VISAGES Project-Team

9. Dissemination

9.1. Animation of the scientific community

9.1.1. Editorial board of journals

- C. Barillot is Associate Editor of IEEE Transactions on Medical Imaging (IEEE-TMI).
- C. Barillot is Associate Editor of Medical Image Analysis (MedIA).
- C. Barillot is Associate Editor of ISRN Signal Processing.
- C. Barillot is Associate Editor of Current Medical Imaging Reviews.
- C. Barillot serves in the peer review committee of the Journal of Computer Assisted Tomography.
- C. Barillot serves in the peer review committee of Neuroimage.

9.1.2. Workshop/Symposium Organization

- S. Prima was co-chairman of the MICCAI workshop on Mesh Processing in Medical Image Analysis (MeshMed 2012), Nice, France, Oct. 1, 2012 (http://www2.imm.dtu.dk/projects/MeshMed).

9.1.3. Peer Reviews of journals

- IEEE TIP (SP, CB), IEEE TBE (SP), IEEE TITB (SP), Medical Image Analysis (CB, SP), NeuroImage (CB, IC), Computer Methods and Programs in Biomedicine (CB), Phys. Med. Biol. (CB), Comp. in Biol & Med. (CB), J. of Neuroscience Methods (CB), Image and Vision Computing (CB), JMIV (CB), Machine Vision and Applications (SP), Pattern recognition letters (SP), American Journal of Physical Anthropology (SP), Journal of Anatomy (SP)

9.1.4. Technical Program Committees (TPC) of conferences

- C. Barillot was area chair of Miccai 2012, SPIE 2012, TPC member of MICCAI workshops DCICTIA 2012, ICSS 2012, MBIA 2012, and MCV 2012, TPC member of IEEE CBMS 2012, ICPR 2012, ESMRMb 2012, SFRMBM 2012 ECR/imaGine 2011
- S. Prima was TPC member of MICCAI'2012, IEEE ISBI'2012, IEEE ICPR'2012, MeshMed'2012.
- I. Corouge was TPC member of the MICCAI 2012 Workshop on Novel Biomarkers for Alzheimer's Disease and Related Disorders.
- P. Maurel was TPC member of MICCAI'2012, IEEE ISBI'2012, MICCAI 2012 Workshop on Novel Biomarkers for Alzheimer's Disease and Related Disorders.
- O. Commowick was TPC member of MICCAI'2012, IEEE ISBI'2012, MICCAI 2012 Workshop on Novel Biomarkers for Alzheimer's Disease and Related Disorders.

9.1.5. Scientific societies

- C. Barillot is member of the Board of Directors of IPMI (Information Processing in Medical Imaging)
- C. Barillot is member of IEEE EMBS
- C. Barillot is senior member of IEEE
- C. Barillot, O. Commowick, P Maurel and S. Prima are members of the MICCAI society

9.2. Teaching

Teaching on 3D Medical Imaging (visualization, segmentation, fusion, management, normalization) and Image Guided Surgery in the following tracks:

- Master 2 SIBM, University of Angers-Brest-Rennes : 26h (*C. Barillot, O. Commowick, S. Prima, I. Corouge, E. Bannier, JY Gauvrit*)
- C. Barillot is responsible for one semester.
- J-Y. Gauvrit is the coordinator for the Master.
- Sylvain Prima gave two 3-hour lectures as an invited speaker at the SERA summer school (June 5-8, Tampere, Finland, http://www.cs.tut.fi/sera2012)
- Elise Bannier gave 4-day lecture in fMRI and E-Prime to Emmanuelle Le Bars, MR Physicist from the University Hospital of Montpellier (February 2012, Rennes, France). This training was funded by Siemens.
- Ecole Supérieure d'Ingénieur de Rennes (ESIR) : 60h in Medical Imaging (P. Maurel) and 60h in general Image Processing (P. Maurel)

9.3. Participation to seminars, scientific evaluations, awards

- C. Barillot served as expert for the APHP-DHU program 2012
- C. Barillot served as expert for the PHRC national program 2012
- C. Barillot is elected-member of the Scientific Board of CNRS-INS2I
- C. Barillot is permanent member of the Administrative Council of the pôle de compétitivité "Images & Réseaux"
- Sylvain Prima served as expert for The Netherlands Organisation for Scientific Research (NWO)
- Sylvain Prima is a member of the CUMIR committee (Commission des Utilisateurs des Moyens Informatiques pour la Recherche) and of the working group "voyages".

9.4. Dissemination toward non specialists

- Sylvain Prima gave a 1-hour lecture on "computer-assisted paleoanthropology" on June 26 at the "Conf'Lunch" monthly seminar organised at Inria.
- Christian Barillot participate to a 1-hour debate on "L'exploration médicale du cerveau : hommage au Voyage fantastique d'Isaac Asimov" during the "UTOPIALES" festival at Palais des Congres, Nantes, Nov. 2012. (http://www.utopiales.org/christian-barillot)
- In collaboration with Biogenouest, Neurinfo organized a user meeting in December 2012. This meeting attended by scientists, students, MRI operators, physicians, ..., gave us the opportunity to present an overwiew of the Neurinfo activities to our user community. Four users presented the research project they have been conducting at Neurinfo.
- In cunjonction with INSERM and ARSEP we organized a Lab visits to the MS population community to disseminate our current work in imaging in Multiple Sclerosis (16th November 2012).

CLIME Project-Team

9. Dissemination

9.1. Scientific Animation

- Marc Bocquet is co-chair of the INSU/LEFE MANU scientific commitee.
- Marc Bocquet is a member of the Scientific Council of the CERFACS institute in Toulouse, France.
- Marc Bocquet is Associate Editor of the Quaterly Journal of the Royal Meteorological Society.
- Marc Bocquet has co-organised the Les Houches international summer school “Advanced data assimialtion for geosciences”, Les Houches, 28 May 2012 - 15 June 2012.
- Marc Bocquet has co-organised the 4th “Colloque national d’assimilation de données”, Nice, 17-19 December 2012.
- Isabelle Herlin is member of the Scientific Council of CSFRS (High Council for Strategic Education and Research in France).
- Isabelle Herlin organised sessions on "Analysis of data of different scales and sources for mesoscale environmental models" for the International Congress on Environmental Modeling and Software (IEMSs2012).
- Isabelle Herlin is a member of Evaluation Committee at Inria.
- Isabelle Herlin is a member of the Scientific Council of OSU-EFLUVE.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master OACOS: Marc Bocquet, Vivien Mallet; Introduction to Data Assimilation for Geophysics; 30 hours; M2; UPMC, X, ENS, ENSTA ParisTech, École des Ponts ParisTech; France.

Master "Nuclear Energy": Marc Bocquet, Vivien Mallet, Victor Winiarek; 12 hours; M2; École des Ponts ParisTech; France.

Master SGE and École des Ponts ParisTech: Vivien Mallet; Air Pollution; 6 hours; M2; École des Ponts ParisTech , Paris 7-Diderot, Paris Est; France.

9.2.2. Supervision

PhD : Mohammad Koohkan, “Modélisation inverse et assimilation de données en qualité de l’air”, University Paris Est, December 20th, 2012, Marc Bocquet.

PhD in progress : Paul Baudin, “Agrégation séquentielle de prédicteurs appliquée à la prévision de la qualité de l’air”, September 2012, Vivien Mallet and Gilles Stoltz.

PhD in progress : Karim Drifi, “Reduced models for image assimilation”, University Paris Centre, October 2009, Isabelle Herlin.

PhD in progress : Yann Lepoittevin, “Tracking of image structures”, University Paris Centre, October 2012, Isabelle Herlin.

Yiguo Wang, "Lidar data assimilation”, October 2009, Karine Sartelet, Patrick Chazette, Marc Bocquet.

PhD in progress : Victor Winiarek, “Dispersion atmosphérique en milieu urbain et modélisation inverse pour la reconstruction de sources”, University Paris Est, October 2009, Marc Bocquet.

9.2.3. Juries

- Bocquet, M., HdR, Thibaut Montmerle, “Assimilation des données à moyenne échelle pour l’étude des systèmes précipitants”, 27 January 2012, Toulouse, France.
- Bocquet, M. HdR, Olivier Pannekoucke, “Dynamique et modélisation de l’information dans les modèles météorologiques”, 15 November 2012, Toulouse, France.

9.3. Popularization

- Vivien Mallet introduced mathematical modeling for environmental sciences at the award ceremony for Paris mathematical olympiads.
- Anne Tilloy contributed to La Fête de la Science, which is a national initiative for science popularization to which Inria Paris-Rocquencourt took part

FLUMINANCE Project-Team

8. Dissemination

8.1. Scientific Animation

Christophe Collewet

- Member of the irstea evaluation committee
- Member of the ecotechnologies department committee

Patrick Héas

- Seminar Image group GREYC, December 2012
- Reviewing in IEEE trans. on Geosciences and Remote Sensing (TGRS) and in IEEE trans. on Image Processing (IP)

Dominique Heitz

- Member of IRSTEA "Comité directeur des Systèmes d'Information"
- Member of IRSTEA "Comité Technique Spécial"
- Responsible of the IRSTEA ACTA Team

Cédric Herzet

- Organization commitee "Journées "Apprentissage et Parcimonie" October 2012
- Technical program committees of ICASSP 2013 and SPARS 2013
- project reviewer for the "Fond National de la Recherche Scientique" (FNRS), Belgique

Etienne Mémin

- Invited conference "Conf'luences" IMFT, Toulouse, April 2012.
- Invited conference "Journée LEFE/MANU de l'INSU", ENS Paris, March 2012
- Invited conference "Workshop on Tolopology in Fluid flow visualization", Pisa, June 2012
- Seminar LFD-FIUBA, Buenos Aires, November 2012
- Reviewer of FET Open projects
- Reviewer for NWO (Netherlands Organisation for Scientific Research) Vici projects
- Associate editor of the Journal of Computer Vision
- Associate editor of the journal of Image and Vision Computing
- Scientific committee and Organisation committee of the International Conference on Ensemble Methods in Geophysical Sciences, Toulouse, November 2012
- Reviewing for Tellus-A, IEEE Im. Proc., IEEE trans. Pat. Anal. Mach. Intel. , Int. Journ. Comp. Vis., Im. Vis. Comp., Exp in Fluids, ECCV'12
- Responsible of the "Commission Développement Technologique" Inria-IRISA Rennes
- member of the "Commission Personnel" Inria-IRISA Rennes

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Licence : Dominique Heitz, Mécanique des fluides, 30h, niveau L2 INSA Rennes

Master : Patrick Héas, Modélisation Statistique des Images, Mastere SISEA, 15h , niveau M2, Université de Rennes 1.

Master : Dominique Heitz, Mécanique des fluides, 25h, niveau M1, Dep GMA INSA Rennes

Master : Cedric Herzet, Analyse de données, Mastere de Statistiques et Econométrie, 10h, niveau M1, Université de Rennes I

Master : Etienne Mémin, Analyse du mouvement, Mastere Informatique, 15h, niveau M2, Université de Rennes 1.

Master : Etienne Mémin, Vision par ordinateur , 15h, niveau M2, ESIR Université de Rennes 1.

8.2.2. Supervision

PhD & HdR :

PhD : Christophe Avenel, Suivi de courbes libres fermées déformables par processus stochastiques, Université de Rennes I, 08/12/2011, Etienne Mémin et Patrick Pérez

PhD : Pierre Dérian, Estimation multi-échelle de mouvements de Fluides turbulents dans des séquences d'images,Université de Rennes I, 07/11/2012, Patrick Héas et Etienne Mémin

PhD in progress : Ioana Barbu, Estimation volumique de mouvement fluides /'a partir de séquence d'images, 01/11/2010, Cédric Herzet et Etienne Mémin

PhD in progress : Sébastien Béyou, Filtre d'ensemble pour l'assimilation de données images, 01/11/2010, Francois Le Gland et Etienne Mémin

PhD in progress : Qui Dao, Commande des écoulements fluides par asservissement visuel, 01/10/2010, Christophe Collewet

PhD in progress : Cordelia Robinson, Assimilation de données images dans un modèle LES : application à la reconstruction d'écoulements turbulents tridimensionnels , 01/11/2011, Dominique Heitz et Etienne Mémin

PhD in progress : Yin Yang , Assimilation d'images par techniques variationnelle ensembliste , 01/11/2011, Etienne Mémin

PhD in progress : Véronique Souchaud, Estimation directe de décomposition orthogonales propres à partir de séquences d'images, 01/11/2009, Cédric Herzet et Etienne Mémin

8.2.3. Juries

Etienne Mémin

- Président du Jury de th/'ese de Pierre Alain, Université de Bretagne Sud, mai 2011.
- Examinateur Jury HDR d'Arthur Vidard, Université J. Fourier, decembre 2012.

MAGIQUE-3D Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Conferences Organization

- In collaboration with the Institute of Numerical Mathematics and Mathematical Geophysics (Novosibirsk State University), Magique 3D organized the First Russian-French Conference on Mathematical Geophysics, Mathematical Modeling in Continuum Mechanics and Inverse Problems (June 18-22) in Biarritz. This conference was the kick-off meeting of the GEO3D project between the two teams. It focused on direct and inverse problems in mathematical geophysics, mathematical modeling in continuum mechanics, and wave propagation.

  Gathering well recognized specialists with a large spectrum of domain of expertise (geophysical modeling, wave propagation, numerical analysis, large scale problems, inverse problems...), it aimed at creating synergy resulting in theoretical and technological advances in these domains. It initiated discussions and defined joint research projects between French and Russian researchers.

  It gathered around forty participants.

  http://uppa-inria.univ-pau.fr/m3d/ConfFR/
- Magique 3d coorganized with the BCAM the Aquitanie-Euskadi Workshop on Applied Mathematics (October 29-31) in Biarritz. It was the closing workshop of the AKELARRE project (Aquitaine-Euskadi fundings), it focused on wave problems which were the subject of the joint project and take place in different areas of applied mathematics (control, finite elements, asymptotic analysis, boundary conditions, high performing computing, ...). and it gathered around 30 participants.

  http://uppa-inria.univ-pau.fr/m3d/ConfInriaBcam/

9.1.2. Administrative Activities

- Hélène Barucq is vice-chair of the Inria evaluation committee. From 2009 to 2012, she has been member of the panel of experts for the ANR programs "SIMI1 programmes blanc et jeunes chercheurs", http://www.agence-nationale-recherche.fr/programmes-de-recherche/recherches-exploratoires-et-emergentes/. She is the scientific leader of the strategic action Inria-TOTAL "DIP: Depth Imaging Partnership", http://dip.inria.fr/
- Julien Diaz is elected member of the Inria evaluation committee and member of the CDT (Commission de Développement Technologique of Inria Bordeaux Sud-Ouest.
- Victor Peron is member of the CJC (Commission Jeunes Chercheurs) of Inria Bordeaux Sud-Ouest
- Sébastien Tordeux is elected member of the 26th section of the CNU.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master : Julien Diaz et Sébastien Tordeux, Introduction aux phénomènes de propagation d'ondes, 55 Eq TD, M2,

Master : Victor Peron et Sébastien Tordeux, Analyse numérique fondamentale, 110 Eq. TD, M1, UPPA, France,

Summer School : Sébastien Tordeux, Introduction à l'analyse mathématique de l'équation de Helmholtz, 12 Eq. TD, Ecole d'été de Jaca 2012, Espagne

9.2.2. Supervision

HdR : Sébastien Tordeux, Modélisation asymptotique pôur les problèmes de propagation d'ondes, Université de Pau et des Pays de l'Adour, January 2012.

PhD in progress : Julien Alvarez, hp-adaptive inversion of magnetotelluric measurements, October 2011, Hélène Barucq and David Pardo.

PhD in progress : Lionel Boillot, Propagateurs optimisés pour les ondes élastiques en milieux anisotropes, May 2011, Hélène Barucq and Julien Diaz.

PhD in progress : Marie Bonnasse-Gahot, Simulation de la propagation d'ondes élastiques et visco-élastiques en régime harmonique par des méthodes Galerkin discontinues d'ordre élevé en maillage non-structuré adaptées au calcul haute performance, October 2012, Julien Diaz and Stéphane Lantéri.

PhD in progress : Théophile Chaumont Frélet, , October 2012, Hélène Barucq and Christian Gout.

PhD in progress : Élodie Estecahandy, Sur la rsolution de problèmes de diffraction inverses avec des angles d'ouverture réduits, October 2010, Hélène Barucq and Rabia Djellouli.

PhD in progress : Jérôme Luquel, RTM en milieu hétérogène par équations d'ondes élastiques, November 2011, Hélène Barucq and Julien Diaz.

PhD in progress : Vanessa Mattesi, détection des hétérogéenéeités en acoustique et élastodynamique, October 2011, Hélène Barucq and Sébastien Tordeux.

PhD in progress : Florent Ventimiglia, Schémas d'ordre élevé et pas de temps local pour les ondes élastiques en milieux hétérogènes, November 2010, Hélène Barucq and Julien Diaz.

9.2.3. Juries

- Hélène Barucq was jury member for the PhD defense of
  - Sébastien Impériale, Modélisation mathématique et numérique de capteurs piézoélectriques, January 2012 (Université de Paris Dauphine).
  - Sébastien Cambon, Méthodes d'élements finis d'ordre élevé et d'équations intégrales pour la résolution de problèmes de furtivité radar d'objets à symétrie de révolution, July 2nd 2012 (Université de Toulouse).
  - Mohamed Hansbo, Sur le modèle de Kerr-Debye pour la propagation des ondes électromagnétiques, October 1st 2012 (Université de Bordeaux).
  - Dimitri Nicolas, Couplage de méthodes d'échantillonnage et de méthodes d'optimisation de formes pour des problèmes de diffraction inverses, November 28th 2012 (École polytechnique).
- Sébastien Tordeux was jury member for the PhD defense of
  - Pierre-Henri Cocquet, Étude mathématique et numérique homogénéisé de métamatériaux, December 7th 2012 (Université de Toulouse).

9.3. Popularization

- Hélène Barucq, Lycée Cassin à Bayonne, conférence pour des classes de seconde, première et terminale, sur l'application des mathématiques dans la vie courante, April 6th 2012;
- Hélène Barucq, Médiathèque de Cambo-les-Bains, Cycle Café des Sciences, "Les mathématiques, ça sert!!!", April 6th 2012.

MOISE Project-Team

9. Dissemination

9.1. Scientific Animation

- E. Blayo has organized, with M. Bocquet (EPI CLIME) and E. Cosme (LEGI, Grenoble), a 3-week international summer school on Advanced Data Assimilation for Geosciences. Les Houches, May 28 - June 15, 55 participants from more than 20 countries http://houches2012.gforge.inria.fr
- E. Blayo is one of the organizers of the 4th National Conference on Data Assimilation. Nice, December 17-19, 2012. http://sama.ipsl.jussieu.fr/Fr/events/workshops/2012_12_17_CNA2012.html
- L. Debreu and E. Blayo have organized, with the Inria Valorization service, a one-day In'Tech seminar "Atmosphere and meteorological forecast: new tools, new usages". http://www.inria.fr/centre/grenoble/agenda/seminaire-in-tech-atmosphere-et-previsions-meteorologiques
- Since 2010, Ch. Kazantsev is the Director of the IREM of Grenoble http://www-irem.ujf-grenoble.fr/irem/accueil/. The Institute is under rapid development now, joining about 25 teachers of secondary schools of the Grenoble region and 15 university professors. They work together 16 times a year on the development of the teaching strategy for the educational community. In addition to this, IREM is the editor of two journals: "Grand N" destined to primary schools teachers and "Petit x" – to the secondary schools.
- A. Rousseau is member of the editorial board of *Discrete and Continuous Dynamical Systems* - Series S (DCDS-S).
- N.Papadakis is a Co-Organisator of the "Journés Bordelaises d'Analyse Mathématique des Images". November, 12-14, 2012 http://www.math.u-bordeaux1.fr/~jaujol/conf2012/JBAMI2012.html,
- C. Prieur is in the scientific committee of the SAMO 2013 conference which will be held in Nice in july 2013, jointly with MASCOT NUM annual conference.
- C. Prieur was in the scientific committee of the Journées MAS 2013 (SMAI) which were held in Clermont-Ferrand in august 2012.
- C. Prieur and L. Viry are organizing jointly with H. Monod and R. Faivre (INRA) a school on sensitivity analysis for environmental models (les Houches, 7-12 april, 2013).
- C. Prieur is member of the board of the group mathematical statistics of the French society of statistics (SFdS).
- C. Prieur organized a session on sensitivity analysis in the Journées MAS (SMAI) 2013.
- C. Prieur organized a mini-symposium on sensitivity analysis for correlated inputs in the SIAM conference on uncertainty quantifications in Raileigh in April 2012.
- L. Debreu organized a one-day meeting on numerical kernels of ocean and atmospheric models, Paris, October 18, 2012.
- L. Debreu organized a three day tutorial on the use of realistic of ocean and atmospheric models at the 11th African conference on research in Computer Science and Applied Mathematics (CARI), Algiers, October 9-11, 2012.
- B.Lemieux gave a seminar at LSCE (Saclay) to present the DatIce tool http://www.lsce.ipsl.fr/Phocea/Vie_des_labos/Seminaires/index.php?y=2012&id=206.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: M. Nodet: Statistiques, 80h, L2, Université de Grenoble, France

Master: M. Nodet: Inverse Methods, 28h, M2, Université de Grenoble, France

Licence: E. Blayo: Mathematics for engineers, 72h, L1, university of Grenoble, France

Master : E. Blayo: Finite element methods, 45h, M1, university of Grenoble, France

Master : E. Blayo: Coupling methods for PDEs, 27h, M2, university of Grenoble, France

Master: E. Blayo: Data assimilation in oceanography, 2h, M2, Ecole des ponts Paris Tech, France

Master: A.Rousseau: Modèles mathématiques spatialisés pour les sciences de l'environnement, 12h, niveau M2, Université de Montpellier 2, France

Master: L.Debreu: Numerical Modelling for coastal oceanography, 18H, M2, Brest University, France.

Doctorat: E. Blayo: Introduction to data assimilation, 16h, university of Grenoble, France

Doctorat: A.Vidard: "Data Assimilation, an introduction", 8h, Université de Grenoble

9.2.2. Internships

Alexis Jacq and Marie Leturcq did internships for their L3 and M1 degrees, they both worked with M. Nodet and B. Bonan about data assimilation for glaciology.

Sébastien Barbier, M2R Internship (6 months), Modélisation de stratégies de dépollution d'une ressource hydrique en milieu naturel advised by A. Rousseau.

Jean-Philippe Bernard, M2R Internship (6 months), Développement et implémentation de modèles couplant descriptions fluides et biologiques pour les écosystèmes côtiers advised by A. Rousseau.

Alexandre Hoffmann, L3 internship, he worked with V. Chabot, A. Vidard and M. Nodet about interpolation methods for image assimilation.

9.2.3. Supervision

HdR : Arthur Vidard, "Assimilation de données et méthodes adjointes pour la géophysique", Université de Grenoble, 13/12/2012

PhD : Jean-Yves Tissot, Sur la décomposition ANOVA et l'estimation des indices de Sobol'. Application à un modèle d'écosystème marin., UJF, 16 novembre 2012, Clémentine Prieur et Eric Blayo

PhD : David Cherel, Décomposition de domaine pour des systèmes issus des équations de Navier-Stokes, UJF, 12 décembre 2012, Eric Blayo et Antoine Rousseau

PhD : Alexandre Janon, Analyse de sensibilité et réduction de dimension. Application à l'océanographie, Université de Grenoble, 15 novembre 2012, C. Prieur and M. Nodet

PhD in progress : Manel Tayachi, Couplages de modèles hydrologiques et océanographiques, 01/05/2010, E. Blayo & A. Rousseau

PhD in progress : Bertrand Bonan, Assimilation de données pour des modèles de calotte polaire, Université de Grenoble, M. Nodet and C. Ritz

PhD in progress : Pierre-Antoine Bouttier, Variational data assimilation into highly nonlinear ocean models, October 2009, E. Blayo and J. Verron

PhD in progress : Manel Tayachi, Couplages de modèles hydrologiques et océanographiques, 01/05/2010, E. Blayo & A. Rousseau

PhD in progress : Laurent Violeau (EPI TOSCA), Stochastic Lagrangian Models and Applications to Downscaling in Fluid Dynamics, 01/10/2010, M. Bossy (EPI TOSCA, Inria Sophia) & A. Rousseau

PhD in progress : Vincent Chabot, "Assimilation de données pour l'estimation de structures 2D et 3D dans des séquences d'images", started the 23rd of October 2010, Maëlle Nodet and Arthur Vidard supervisors.

9.2.4. Juries

- E. Blayo was a referee of PhD thesis of Pierre Allain: Analyse et synthèse de mouvements de foules par contrôle optimal.. Université de Bretagne Sud, January 27, 2012
- E. Blayo was a member of the jury for the PhD defense of Dorothée Robert: Caractérisation et modélisation de la dynamique de l'évapotranspiration en Afrique soudanienne en zone de socle : interaction entre les aquifères et la végétation. Université de Grenoble, August 30, 2012.
- E. Blayo was a member of the jury for the HDR defense of Arthur Vidard: Assimilation de données et méthodes adjointes pour la géophysique. Université de Grenoble, December 13, 2012.
- A. Rousseau was a member of the Inria Board for Research Positions 2012 (6 juniors and 2 seniors researchers).
- A. Rousseau is a member of Inria Evaluation Comittee
- A. Rousseau participated in a career fair at MIT with M. Thonnat (Deputy Scientific Director at Inria), A. Theis-Viémont and E. Chareyre (Human Resources at Inria). The European Career Fair is an annual recruiting event, organized by the MIT European Club, that connects employers from Europe with the most talented candidates that live in the US.
- M. Nodet is a member of the Jury Agregation Externe de Mathematiques
- C. Prieur was a referee of the PhD jury of Sylvain Girard, Mines Paris Tech December,17, 2012
- C. Prieur was the president of the PhD jury of Yann Caniou, Université de Clermont-Ferrand. November,29, 2012
- C. Prieur was a referee of the PhD jury of Catalina Ciric, Université Lyon 1. September, 6, 2012
- C. Prieur was the president of the HdR jury of S. Gadat, Université de Toulouse. November, 22, 2012
- C. Helbert was a referee of the PhD jury of Jean-Yves Tissot, Université de Grenoble. November, 16, 2012

9.3. Popularization

- In the context of the Mathc2+ program, E. Blayo has given a conference "Applied maths: mathematics for the society and its environment". Grenoble, June 19, 2012.
- In the context of the program "100 parrains-100 classes", Ch. Kazantsev gives a weekly lectures to pupils of one secondary school in Grenoble.
- Ch.Kazantsev has participated in the "Fête de sciences" presenting the activities of the IREM of Grenoble.
- A. Rousseau gave a lecture to the first National Conference of Mathematics Popularization in Orléans, http://www.animath.fr/conf/conferences.php.
- A. Rousseau is a member of the french executive board of "Mathématiques pour la planète Terre 2013", http://www.mpt2013.fr.
- A. Rousseau gave 5 short interviews on France Inter (national radio), http://www.franceinter.fr/player/reecouter?play=475445, http://www.franceinter.fr/player/reecouter?play=477677, http://www.franceinter.fr/player/reecouter?play=478643, http://www.franceinter.fr/player/reecouter?play=479435, http://www.franceinter.fr/player/reecouter?play=480603.
- M. Nodet and A. Rousseau (with S. Minjeaud, CNRS Nice) published a popularization paper on basic principles in oceanography : http://interstices.info/circulation-oceanique
- E. Kazantsev has given a conference "Geophysical Hydrodynamics for dummies and for all others" at the meeting of professors of secondary schools of the Grenoble region organized by IREM of Grenoble http://www-irem.ujf-grenoble.fr/irem/accueil/

POMDAPI Project-Team

6. Dissemination

6.1. Scientific Animation

C. Japhet was in the local organization committee for the 21st International Conference on Domain Decomposition Methods, Rennes, 25-29 June 2012.

C. Japhet and M. Kern have organized a minisymposia on Domain decomposition for porous media flow and transport at the 21st International Conference on Domain Decomposition Methods, Rennes, 25-29 June 2012.

C. Japhet and Y. Maday (UPMC-Paris 6) have organized a minisymposia on Domain decomposition with mortars at the 21st International Conference on Domain Decomposition Methods, Rennes, 25-29 June 2012.

M. Kern is Deputy Director of Maison de la Simulation , a joint project between CEA, CNRA, Inria, University Paris Sud and Unversity of Versailles, focused on applications of high end computing.

M. Kern is Program Director of the SIAM Activity Group on Geosciences, and is co-chair (with M. Putti, University of Padova) of the SIAM Conference on Mathematical and Computational Issues in the Geosciences (to be held June 17-20, 2013 in Padova, Italy).

M. Kern was part of the program committee for the 21st International Conference on Domain Decomposition Methods, Rennes, 25-29 June 2012.

J. E. Roberts is a member of the External Advisory Board for CFSES (Center for Frontiers of Subsurface Energy Security).

J. E. Roberts organized (with Z. Mghazli and H. Ben Ameur) the mini symposium “Problems in porous media: modeling and solving techniques” at the SM2A conference, 10-13 September 2012, Marrakech, Morrocco.

J. E. Roberts is a member of the selection committee for recruiting professors in the department of maths of the university of Bergen, and a member of the national Norwegian committee for the promotion of professors.

J. E. Roberts was a member of the Scientific Committee and the Prize Committee for the Interpore 2012 conference, May 14-16, West Lafayette, Indiana. USA. For this conference she also organized the 3 session mini-symposium “Numerical modeling for flow in fractured and other heterogeneous porous media”.

J. E. Roberts was a member of the Nominating Committee for Officers of the SIAM Activity Group Geosciences.

6.2. Teaching - Supervision - Juries

6.2.1. Teaching

Licence : I. Ben Gharbia, *Analyse numérique et calcul scientifique*, 78 h, L2, Université Paris–Dauphine, France.

Licence : I. Ben Gharbia, *Mathématiques 5*, 54 h, L3, Université Panthéon–Assas, France.

Licence : I. Ben Gharbia, *Mathématiques 1*, 18 h, L1, Université Panthéon–Assas, France.

Licence : I. Ben Gharbia, *Statistiques 1*, 18 h, L1, Université Panthéon–Assas, France.

Licence : F. Clément, *Calcul différentiel*, 17 h, L3, Mines ParisTech, France.

Master: J. Ch. Gilbert, *Optimisation différentiable – Théorie et algorithmes*, 42 h, M1, ENSTA ParisTech, France.

Master: M. Kern, *Éléments finis*, 30 h, M1, Mines ParisTech, France.

Master: M. Kern, *Problèmes inverses*, 26 h, M1, Mines ParisTech, France.

Master: J. Jaffré et J. E. Roberts, *Volumes finis et éléments finis mixtes*, 20 h, M2, École Nationale d'Ingénieurs de Tunis (ENIT), Tunisia.

Master: J. E. Roberts, *Approximation methods*, 20 h, M1, École Supérieure d'Ingénieurs Léonard de Vinci, France.

6.2.2. Supervision

PhD: Ibtihel Ben Gharbia, *Résolution de Problèmes de Complémentarité – Application à un Écoulement Diphasique Dans un Milieu Poreux*, Université Paris-Dauphine, 5th of December 2012, supervision J. Ch. Gilbert and J. Jaffré.

PhD : Nancy Chalhoub, Estimations a posteriori pour l'équation de convection–diffusion–réaction instationnaire et applications aux volumes finis, Université Paris-Est, 17 décembre 2012, Alexandre Ern (Université Paris-Est), Toni Sayah (Université Saint Joseph, Liban), Martin Vohralík.

PhD: Alice Chiche, *Théorie et Algorithmes Pour la Résolution de Problèmes d'Optimisation de Grande Taille – Application à la Gestion de Production d'Électricité*, Université Pierre et Marie Curie, 28th of June 2012, supervision J. Ch. GILBERT.

PhD in progress: Soleiman Yousef, *Estimations d'erreur a posteriori et adaptativité pour le problème de Stefan*, septembre 2009, Vivette Girault (Université Pierre et Marie Curie), Martin Vohralík.

PhD in progress: Carole Heinry, *Adaptation de maillage et contrôle d'erreur a posteriori pour récupération d'huile assistée*, septembre 2009, Vivette Girault (Université Pierre et Marie Curie), Martin Vohralík.

PhD in progress: Paul-Marie Berthe, Méthode de décomposition de domaines espace-temps pour la mécanique des fluides, septembre 2009, Pascal Omnes (CEA, Université Paris 13), Caroline Japhet.

PhD in progress: Hoang PHUONG THI THAO, *Space Time Domain Decomposition Methods for Transport in Porous Media*, University Pierre et Marie Curie, October 2010, supervision: Jean E. Roberts, Caroline Japhet, Michel Kern.

PhD in progress: Mohamed Hedi Riahi, Identification de paramètres hydrogéologiques dans un milieu poreux, Ecole Nationale d'Ingénieurs de Tunis and University Pierre et Marie Curie, October 2011, supervision: Jérôme Jaffré and Hend Ben Ameur.

PhD in progress: Fatma Cheikh, Identification de failles dans un milieu poreux par une méthode d'indicateurs, Ecole Nationale d'Ingénieurs de Tunis and University Pierre et Marie Curie, October 2011, supervision: Jean E. Roberts and Hend Ben Ameur.

PhD in progress: Elyes Ahmed, Méthodes numériques pour la simulation d'écoulements diphasiques dans un milieu poreux fracturé, Ecole Nationale d'Ingénieurs de Tunis, October 2011, supervision: Jean E. Roberts and Amel Ben Abda.

6.2.3. Juries

- Martin Vohralík a été rapporteur de la thèse de Florent Pled (Vers une stratégie robuste et efficace pour le contrôle des calculs par éléments finis en ingénierie mécanique, ENS Cachan, directeur de thèse Pierre Ladevèze), soutenue le 13 décembre 2012.
- Jérôme Jaffré a été rapporteur de la thèse de Merline Flore Djouwe Meffeja (Simulation et modélisation de milieux granulaires confinés, université de Rennes I, directeurs de thèse Patrick Richard et Edouart Canot), soutenue le 20 janvier2012.
- Jérôme Jaffré a été aussi rapporteur de la thèse de Alessio Fumagalli (Numerical Modelling of Flows in Fractured Porous Media by the XFEM Method, Politecnico di Milano, directeur de thèse Luca Fromaggia), soutenue le 8 mai 2012.

- Jean E. Roberts a été rapporteur de la thèse de Xavier Tunc (Université de Provence, Marseille, directeur de thèse Thierry Gallouet), soutenue le 15 février 2012.

6.3. Popularization

- Creation of articles on Wikipedia.fr [19].
- Seminar on “Mathématiques pour modéliser les eaux souterraines” at “Faites de la Science” (M. Kern).
- Two seminars at the German-French worksop, October 18-19, Fellbach, Germany: J. Jaffré, “Mathematics for computing on a computer: The computer does not calculate exactly”, J. E. Roberts, “Mathematics and simulation of subsurface flow”.

SAGE Project-Team

9. Dissemination

9.1. Scientific Animation

9.1.1. Conferences and networks

- the team Sage organized, with the LMNO, the international conference on Domain Decomposition methods DD21 (Rennes, France, June 2012). Chair J. Erhel (with T. Sassi, University of Caen); members of the organizing committee É. Canot and G. Pichot; webmaster N. Soualem and A. Le Gentil; local coordination E. Blin and F. Cuyollaa.
- G. Pichot is a member of the organizing committee of the SMAI 2013 conference (Seignosse, France, May 2013).
- J. Erhel is a member of the scientific committee of the SMAI 2013 conference (Seignosse, France, May 2013).
- J. Erhel is a member of the scientific committee of the MAMERN'13 conference (Granada, Spain, April 2013).
- J. Erhel is a member of the international advisory committee of the parallel CFD conferences (Atlanta, USA, May 2012 and Changsha, Hunan, China, May 2013).
- J. Erhel is a member of the steering committee of the Réseau National des Systèmes Complexes.

9.1.2. Editorial Boards

- B. Philippe is one of the four chief-editors of the electronic journal ARIMA (revue Africaine de la Recherche en Informatique et Mathématiques Appliquées).
- B. Philippe is managing editor of the electronic journal ETNA (Electronic Transactions on Numerical Analysis).
- J. Erhel is member of the editorial board of ETNA.
- J. Erhel is member of the editorial board of ESAIM:Proceedings.
- J. Erhel is member of the editorial board of Interstices.
- J. Erhel is member of the editorial board of Mathematics of Planet Earth 2013, un jour-une brève.

9.1.3. Inria committees

- É. Canot is member of the CUMI (Commission des Utilisateurs de Moyens Informatiques), of Inria-Rennes, from September 2007.
- É. Canot is member of the CHS (Commission Hygiène et Sécurité), of Inria-Rennes, from September 2010.
- J. Erhel is member of the Comité Technique d'Etablissement Public of Inria.
- J. Erhel is member of Conseil d'Administration of Inria.
- J. Erhel participates in the working group of Inria Rennes on project management (first meeting, December 2012).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

A. Abdelmoula is teaching assistant (permanent position) in computer science at the University of Tunis, Tunisia.

S. Khalfallah is teaching assistant (permanent position since September 2012) in mathematics at the University of Kairouan, Tunisia.

M. Oumouni: TP in mathematics at the University of Kenitra, Morocco.

L. Lenôtre is teaching assistant (contrat doctoral avec mission d'enseignement) in mathematics at the University of Rennes 1.

A. Le Gentil: Master M1; title: TP d'analyse, conception et programmation orientée objets; 26 hours; INSA, Rennes, France.

J. Erhel: Master M2; title: Cours de modélisation et calcul scientifique; 12 hours; INSA, Rennes, France.

É. Canot: Master M2; title: TP de modélisation et calcul scientifique; 12 hours; INSA, Rennes, France.

9.2.2. PhD supervision

PhD: M. Djouwe Tankeo, University of Rennes 1, 20 January 2012, advisors P. Richard with É. Canot.

PhD in progress: S. Sabit, University of Rennes 1, October 2010, advisors J. Erhel with É. Canot.

PhD in progress: S. Khalfallah, University of Rennes 1 and University of Tunis, October 2009, co-advisors J. Erhel and A. ben Abda.

PhD in progress: M. Oumouni, University of Rennes 1 and University of Kenitra, October 2009, co-advisors J. Erhel and Z. Mghazli.

PhD in progress: A. Abdelmoula, University of Rennes 1 and University of Tunis, October 2005, co-advisors B. Philippe and M. Moakher.

PhD in progress: L.-B. Nguenang, University of Yaounde 1, October 2011, advisors E. Kamgnia with B. Philippe.

PhD in progress: L. Lenôtre, University of Rennes 1, October 2012, co-advisors A. Lejay (Inria Nancy) and J. Erhel, with G. Pichot.

9.2.3. Boards of examiners

- HdR: J.-Y. L'Excellent, ENS Lyon, Computer Science, September 2012. Reviewer J. Erhel.
- PhD: S. Duminil, Université du Littoral Côte d'Opale in Calais, Mathematics, July 2012. Reviewer J. Erhel.
- PhD: H. Alcin, University of Nice, Mathematics, December 2012. Chair J. Erhel.
- PhD: M. Rousseau, ENPC in Paris, Mathematics, December 2012. Chair J. Erhel.

9.3. Popularization

- J. Erhel is the scientific coordinator of the website Interstices (since June 2012). See http:http://www.interstices.info.
- J. Erhel gave a talk about numerical models for hydrogeology at lycée Descartes, Rennes, in March 2012 [47]. Video recording at http://videos.rennes.inria.fr/#descartes.
- J. Erhel is member of the editorial board of Mathematics of Planet Earth 2013, un jour-une brève. See http://mpt2013.fr/.

STEEP Exploratory Action

9. Dissemination

9.1. Scientific Animation

- E. Prados is member of the scientific and technical Committee of the GIS (Groupement d'intérêt scientifique) Modélisation urbaine since January 2012.
- E. Prados has been member of the steering committee of the FRB (Fondation pour la Recherche sur la Biodiversité) program modelling and scenarios for the biodiversity from June 2010 to June 2012.
- P.-Y. Longaretti manages the informal SOCLE^3 group. This group brings together researchers from various fields of expertise in exact, environmental and social sciences, with the objective to coordinate their respective research programs on the question of sustainability transition at local scales.
- P. Sturm has been Program Chair of RFIA 2012 – Congrès de Reconnaissance des Formes et Intelligence Artificielle, Lyon, France
- P. Sturm has been Area Chair of ECCV 2012 – European Conference on Computer Vision, Florence, Italy
- P. Sturm has been Area Chair of ICPR 2012 – International Conference on Pattern Recognition, Tsukuba, Japan
- P. Sturm is Associate Editor of IEEE Transactions on Pattern Analysis and Machine Intelligence, Journal of Mathematical Imaging and Vision, and Image and Vision Computing Journal.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

E. Arnaud, Introduction to applied math, 16,5h, L1, Université de Grenoble, France

E. Arnaud, Statistics, 18h, L1, Université de Grenoble, France

E. Arnaud, Image project, 22h, M1, Université de Grenoble, France

E. Arnaud, Introduction to image analysis, 10h, M1, Université de Grenoble, France

E. Arnaud, Computer vision, 39h, M2, Université de Grenoble, France

E. Arnaud, Multimedia indexing, 24h, M2, Université de Grenoble, France

E. Arnaud, Supervising of apprentices, 15h, Université de Grenoble, France

P. Sturm, Informatique visuelle, 37.5h, M2, Université de Grenoble, France

P. Sturm, Computer vision, 13.5h, M2, Université de Grenoble, France

9.2.2. Supervision

HdR: Emmanuel Prados, Recherches en reconstruction 3D photométrique [2], Université Joseph-Fourier – Grenoble 1, 04/04/2012

PhD: Visesh Chari, Shape Estimation for Specular Surfaces [1], Université de Grenoble, 20/11/2012

PhD in progress:

- Anthony Tschirhard, Calibration and sensitivity analysis of a micro-simulation LUTI model, Oct 2012, E. Prados, E. Arnaud, P. Sturm
- Julien Alapetite, part-time PhD student who carries out part of his work in STEEP, graduation expected in 2013, advisor Denis Dupré (CERAG).

9.2.3. Juries

- E. Arnaud has been member of one recruitment committee of a assistant professorships (Grenoble).
- P. Sturm has been reviewer of six and examiner of two PhD theses outside Grenoble.
- P. Sturm has been member of two professorship recruitment committees (Clermont-Ferrand and Evry).

9.3. Popularization

- P.-Y. Longaretti has given four conferences on Environmental Impact and Human Development for a general audience in the last two years.
- P.-Y. Longaretti has coordinated the translation team of the latest book of the American agro-economist Lester Brown, “World on the Edge” (French title: Basculement).

BANG Project-Team

8. Dissemination

8.1. Scientific Animation

B. Perthame is editor in various journals (CALCOLO, CPDE, DCDS(B), Mathematical Medicine and Biology).

D.Drasdo is in the editorial board of TheScientificWorldJOURNAL and ISRN Biophysics. He is member of the leadership team of the large scale grant project Virtual Liver Network (VLN).

B. Perthame represents Inria at the expert group of the Aviesan Institute "Molecular and structural bases of the living" (ITMO Bases moléculaires et structurales du vivant, head Thierry Meinnel).

J. Clairambault represents Inria at the expert group of the Aviesan Cancer Institute (ITMO Cancer, head Fabien Calvo) and is also a member of the "Conseil des Partenaires de l'IUC" (Institut Universitaire de Cancérologie,UPMC, founded November 2012) as (nominated) representative of UPMC.

Luís Almeida was in 2012 a member of the Scientific Advisory Board of CIRB (Centre of Interdisciplinary Research in Biology), Collège de France (UMR CNRS 7241/ INSERM U1050).

8.2. Teaching - Supervision

8.2.1. Teaching

Master: Jean Clairambault, (1) M2 pharmacologie Rennes (cours magistral, 4h/an) et (2) ED Innovation thérapeutique, Université Paris-Sud (cours magistral, 2 h/an): "Modélisation chronothérapeutique du schéma d'administration"; (3) M2 Paris-Descartes "Croissance tissulaire" (2012, cours magistral, 1 h 30)

Master: Marie Doumic-Jauffret, Méthode des Éléments Finis, M1 ENSTA, Paris: 12 h (TD, professeur en cours magistral: P. Ciarlet et S. Fliss)

Master: Dirk Drasdo, M2, Mathematical Biology, UPMC: "Agent-based models of tissue organisation": 24h

Master: Jonathan Touboul, Master Science of Complex Systems (Erasmus Mundus, Ecole Polytechnique, U. Chalmers, Warwick and Gothenburg), M2, 40h, cours magistral "Stochastic Calculus and Limit Theorems"

International schools: Dirk Drasdo, (1) Evry 2012 Thematic Research School "Modelling complex biological systems in the context of genomics" (1.5hrs); (2) DPG - Physics School "Forces and Flow in Biological Systems" (1.5hrs)

8.2.2. Supervision

HdR: Luís Lopes Neves de Almeida, "Quelques problèmes liés à l'étude d'équations aux dérivées partielles issues de la physique, de la géométrie et de la biologie", UPMC, April 2012

PhD: Chadha Chettaoui, "Physical-Based Modelling and Analysis of Animal Tissue Growth and Morphogenesis", ENS Paris, July 2012, Supervisors Dirk Drasdo, Juhui WANG (Unité MIA, INRA, Jouy-en-Josas and, Isabelle HUE (INRA/ENV Alfort/CNRS)

PhD: Luna Dimitrio,"Modelling nucleocytoplasmic transport with application to the intracellular dynamics of the tumour suppressor protein p53" [1], UPMC, September 2012, Supervisors Jean Clairambault and Roberto Natalini (University Sapienza, Rome)

PhD: Nick Jagiella, "Parameterisation of Lattice-Based Tumor Models from Data", UPMC, September 2012. Supervisors Dirk Drasdo, Benoît Perthame, and Irène Vignon-Clémentel (REO)

PhD: William Weens,"Mathematical Modeling of Liver Tumor", UPMC, September 2012. Supervisor Dirk Drasdo

PhD in progress: François Bertaux (since September 2011), supervision by Dirk Drasdo and Gregory Batt

PhD in progress: Anne-Céline Boulanger, supervision by Marie-Odile Bristeau and Jacques Sainte-Marie

PhD in progress: Youssef Bourfia, UPMC (since September 2011), supervision by Jean Clairambault, Mostafa Adimy (Dracula team, Lyon) and Hassan Hbid (UCAD, Marrakech)

PhD in progress: Géraldine Cellière, UPMC (since October 2011), supervision by Dirk Drasdo, Andrei Zinovyev and Emmanuel Barillot (Institut Curie)

PhD in progress: Ján Eliaš, UPMC (since September 2012), supervision by Jean Clairambault and Benoît Perthame

PhD in progress: Casimir Emako-Cazianou, UPMC (since December 2012), supervision by Luís Almeida and Nicolas Vauchelet

PhD in progress: Adrian Friebel (since June 2011), supervision by Dirk Drasdo and Stefan Hoehme

PhD in progress: Luís Carlos García del Molino, "Heterogeneous networks and their dynamics", supervision by J. Touboul and K. Pakdaman

PhD in progress: Hadjer Wafaâ Haffaf, UPMC (since September 2011), supervision by Marie Doumic-Jauffret

PhD in progress: Johannes Neitsch, Univ. Leipzig (since June 2011), supervision by Dirk Drasdo and Stefan Hoehme

PhD in progress: Cristóbal Quininao, "McKean Vlasov equations and neurosciences", supervision by J. Touboul and S. Mischler

PhD in progress: Justine Scher, "Growth-Fragmentation equations in neurosciences", supervision by J. Touboul and S. Mischler

PhD in progress: Karina Vilches, (since sept. 2010), supervision by C. Conca and B. Perthame

M2: Alban Lévi, "Complexity of Random Neural Networks", ENS Cachan et Collège de France, April-August 2012, supervision by G. Wainrib and J. Touboul

M1: Quan Shi, "Self-Organized criticality in random neural networks", École Polytechnique et Collège de France, April-August 2012, supervision by J. Touboul

M1: Flavio de Souza Serra de Pinho Cabeca, "Collective Oscillations in excitable networks", École Polytechnique et Collège de France, April-August 2012, supervision by J. Touboul

8.3. Popularisation

Participation in the "Fête de la science" at Inria-Rocquencourt (October 2011) involving F. Billy, J. Clairambault, V. Roche (Villejuif), in a joint Inria-INSERM booth dedicated to chronotherapy: presentation of a movie and of a video game, both designed by Annabelle Ballesta, and of 2 posters by A. Ballesta and by F. Billy.

J. Clairambault has written a short "Perspective in Mathematical Biology": "Can theorems help treat cancer?" in the Journal of Mathematical Biology [17], contributed by the European Society for Mathematical and Theoretical Biology.

D. Drasdo gave a general presentation on multiscale tissue modelling in the "2e Forum international de Prospective de Recherche et Traitement pour le cancer" in September 2012.

J. Touboul has written a chapter: "A mathematician's view of simplexity in the brain" in the book by A. Berthoz, "Simplexity", to be published by Editions Odile Jacob, Paris.

BIGS Project-Team

9. Dissemination

9.1. Scientific Animation

Conferences organized by our team in 2012:

- STochastic ANalysis days, 9-11 May: A 3 days international meeting gathering some of the best specialists in stochastic analysis and applications (including statistics and fractional fields). Organizers: C. Lacaux, I. Nourdin, S. Tindel.
- Journée Fédération Charles Hermite, 15 October: Modeling for Cancer Therapies. Organizers: W. Blondel, S. Tindel.
- Journée Modélisation des Biomolécules et leurs Interactions, 25-26 October. Organizers: M-D. Devignes, Aurélie Muller-Gueudin.
- Weekly Biostats Seminar at IECN, organized by Aurélie Muller-Gueudin. See http://www.iecn.u-nancy.fr/~muller/gt.html.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

BIGS is a team whose composition includes University staff only. All members teach numerous courses, ranging from L1 to M2 levels.

9.2.2. Supervision

HDR : C. Lacaux, *Contributions à la notion d'autosimilarité et à l'étude des trajectoires de champs aléatoires*, Universté de Lorraine, 6/12/2012. See document [1].

PhD in progress: R. Bar, *Analyse de donnés en ligne*, from 01/09/2010. Advisor: J-M. Monnez.

PhD in progress: B. Lalloué: *Analyse des données dans l'étude de l'influence de caractéristiques socio-spatiales sur des événements de santé*, from 01/09/2010. Advisor: J-M. Monnez.

PhD in progress: R. Bonidal: *Analyse des systèmes discriminants multi-classes à grande marge*, from 01/09/2009. Advisors: Y. Guermeur, S. Tindel.

PhD in progress: G. Nichil, *Claim reserving for insurance*, from 01/09/2010. Advisors: S. Herrmann (University of Dijon), P. Vallois.

9.2.3. Juries

PhD : S. Bounebache, *Stochastic partial differential equations of parabolic type with singular potential*, Universté de Paris 6, June 2012. Advisor: L. Zambotti. Referee: S. Tindel.

PhD: J. Valentin, *Weak Itô formulae*, Telecom Paristech, June 2012. Advisor: A.S. Üstünel. Referee: S. Tindel.

HDR: B. Saussereau: *Equations aux dérivés partielles stochastiques; Equations différentielles stochastiques dirigées par un mouvement brownien fractionnaire*, Université de Franche Comté, November 2012. Referee: S. Tindel.

BIOCORE Project-Team

9. Dissemination

9.1. Scientific Animation

J.-L. Gouzé is a member of the scientific committees for the conferences "Stic et Environnement", BIOMATH and CIFA ; also for the conference for G. Sallet (Senegal 2012). He is in the Inria committee supervising the doctoral theses, and a member of the committee of Labex SIGNALIFE of the University of Nice-Sophia-Antipolis, and of COREBIO PACA. He is a member of the board of the SFBT (French Speaking Society for Theoretical Biology).

M. Chaves is the coordinator of the ANR project GEMCO. Since September 2011 she is also a member of the COST-GTRI (the Working Group on International Relations in Inria's Council for Scientific and Technological Orientation). The Group is in charge of evaluating the Inria's Associated Teams as well as some project proposals (EuroMed 3+3), and ERCIM post-docs.

O. Bernard is in the technical committee of the Computer Applied to Biotechnology (CAB) conferences. He is in the scientific committee of the French conference "Stic et Environnement". He is a member of the scientific committee of the competitivity pole "Trimatec". O. Bernard represents Inria at the ANCRE (Alliance Nationale de Coordination de la Recherche pour l'Energie), in the biomass committee. He is member of the ADT (Technological Development Actions) at Inria.

F. Grognard is a member of the NICE committee, which allocates post-doctoral grants and fundings for visiting scientists at Inria Sophia Antipolis.

P. Bernhard is a member of the scientific committees of the doctoral school "Sciences fondamentales et appliquées" at the University of Nice-Sophia Antipolis. On behalf of the Chairman of PERSAN, he is also in the scientific committee of the "Parc naturel régional des Alpes d'Azur".

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Jonathan Rault , (192h ETD over 2011-2012) "Mathematical analysis and probabilities", initial cycle of Polytech'Nice (eq. L1-L2), Université of Nice Sophia Antipolis, France.

J.-L. Gouzé (18h ETD), P. Hartmann (8h ETD), "Modeling biological networks", 4th year students, Génie Biologique, Polytech'Nice, University of Nice - Sophia Antipolis

O. Bernard (9h ETD), "Mathematical models in Biology". Master on biological oceanography in Villefranche-sur-Mer (M2), Université Pierre et Marie Curie, France.

O. Bernard (4.5 ETD), "Bioenergy from microalgae", Master International Energy Management : alternatives pour l'énergie du futur, Ecole Nationale Supérieure des Mines de Paris, France.

O. Bernard (18h ETD), "Modeling biotechnological processes", Ecole Centrale de Paris, France.

F. Grognard (45.5h ETD) and L. Mailleret (26h ETD), "Equations différentielles ordinaires et systèmes dynamiques", 1st year Engineering in Modeling and Applied Mathematics (eq. L3), Polytech'Nice, Université of Nice Sophia Antipolis, France.

F. Grognard (21h ETD) and L. Mailleret (21h ETD), "Bio-Mathématiques", 2nd year Engineering in Modeling and Applied Mathematics (eq. M1), Polytech'Nice, Université of Nice Sophia Antipolis, France.

F. Grognard (10h ETD) and L. Mailleret (10h ETD) supervised a four-student three-week project for students in 2nd year Engineering in Modeling and Applied Mathematics (eq. M1), Polytech'Nice, Université of Nice Sophia Antipolis, France.

M. Chaves (4.5h ETD), J.-L. Gouzé (9h ETD), “Discrete and continuous approaches to model gene regulatory networks”, Master of Science in Computational Biology (M2), University of Nice - Sophia Antipolis.

M. Chaves and J.-L. Gouzé have prepared (jointly with other researchers) a book chapter entitled “Modeling and analysis of gene regulatory networks” on the topics taught in this last course, to appear in a Springer volume [54].

9.2.2. Supervision

PhD : J. Rault, “Modélisation mathématique structurée en taille du zooplancton, UNSA, defended December 11, 2012. Supervisors: J.-L. Gouzé and E. Benoit.

PhD in progress : M. Teixeira-Alves, “Modélisation de réseaux écologiques dans un cadre de protection des cultures: applications à la lutte biologique”, since september 2009, UNSA. Supervisors: F. Grognard and L. Mailleret.

PhD in progress : P. Hartmann, "Developement of a model for microalgal photoadaptation", since september 2010, UNSA. Supervisor: O. Bernard.

PhD in progress : M. Castel “Modélisation des trajectoires évolutives des pathogènes de plantes dans les écosystèmes agricoles", since October 2010, University of Rennes. Supervisors : F. Hamelin and D. Andrivon (Agrocampus Ouest) and L. Mailleret.

PhD in progress : A. Carta, “Analysis and Control of models of biological regulatory systems. Application to growth control in *E. coli*”, since december 2010, UNSA. Supervisors: J.-L. Gouzé and M. Chaves.

PhD in progress : C. Baroukh, “Modeling the coupling of microalgae with anaerobic digestion”, since September 2011, University of Montpellier 2. Supervisors: J.-P. Steyer and O. Bernard.

PhD in progress : A. Lebon, “Modélisation couplée plantes-ravageurs-ennemis naturels dans un contexte de lutte biologique", since October 2011, University of Montpellier 2. Supervisors : Y. Dumont (CIRAD), F. Grognard and L. Mailleret.

PhD in progress : I. Belgacem “Controle de systèmes de régulation génétique”, since November 2011, UNSA. Supervisor: J.-L. Gouzé.

PhD in progress : H. Bonnefond, "Experimental development of selection oriented photobioreactors", since september 2012, UPMC. Supervisors: A. Sciandra and O. Bernard

PhD in progress : C. Combe, "Response of microalgae to fluctuating light", since september 2012, UPMC. Supervisors: A. Sciandra and S. Rabouille.

PhD in progress : G. Grimaud, "Controlled competition for the selection of microalgal species of interest", since September 2012, UNSA. Supervisors: O. Bernard and S. Rabouille.

PhD in progress : T. Morel Journel, “Où, quand, combien? Stratégies d’introduction d’organismes dans un environnement spatialement structuré”, since October 2012, UNSA. Supervisors: T. Guillemaud, E. Vercken and L. Mailleret.

PhD in progress : E. Rousseau, ”Plant viruses adaptation to quantitative resistance: from the study of their impact on within-host viral evolutionary dynamics to their durable management in agroecosystems”, since November 2012, UNSA. Supervisors: F. Grognard, L. Mailleret, B. Moury, and F. Fabre (INRA Avignon).

9.2.3. Juries

J.-L. Gouzé was referee for the thesis of Josephine Kagunda “Mathematical Analysis and Dynamical Systems Modeling of Highland Malaria in Western Kenya.”, Université de Lorraine, November 23.

J.-L. Gouzé was in the jury for the thesis of Matthieu Sebbah, « Stabilité d’inégalités variationnelles et prox-régularité, équations de Kolmogorov périodiques contrôlées », University of Montpellier 2, July 2.

J.-L. Gouzé was referee for the thesis of Giovanna De Palo “Dynamics and adaptation in the olfactory and phototransduction pathways”, SISSA - International School for Advanced Studies, Trieste (Italy), Octobre 29.

J.-L. Gouzé was in the jury for the thesis of Jonathan Rault “Modélisation mathématique structurée en taille du zooplancton,” UNSA, December 11.

J.-L. Gouzé was referee for the thesis of Giovanni Iacono “Systems biology approaches to the analysis of large-scale biological networks”, SISSA- International School for Advances Studies, Trieste (Italy), October 29.

M. Chaves was in the thesis jury of Sara Berthoumieux “Méthodes pour l’identification de modèles de réseaux biochimiques,” University of Lyon 1 Claude Bernard and Inria GRA, June 13.

M. Chaves was in the thesis jury of Abibatou Mbodj, “Qualitative modeling of mesoderm differentiation in *Drosophila melanogaster*,” University of Marseille and TAGC (INSERM U928), December 17.

O. Bernard was referee for the thesis of J. Mailier, ”Contribution to mathematical modeling of bioprocesses with application to cultures of microalgae and anaerobic digestion.“, Université de Mons (Belgium), May 25.

O. Bernard was president of the jury for the thesis of P. Collet, ”Analyse de Cycle de Vie de la valorisation énergétique de la biomasse algale : prise en compte des aspects dynamiques dans l’étape d’inventaire”, University of Montpellier, April 4.

O. Bernard was referee for the thesis of Y. Eynaud, "Contribution à la gestion de la complexité des modèles en sciences de l’environnement ", University of Aix-Marseille, December 6.

P. Bernhard was in the thesis jury of Lorenzo Maggi, ”Markovian competitive and cooperative games with applications to communications”, at Eurecom Sophia Antipolis, October 9.

J.-L. Gouzé is in the thesis committee of C. Baroukh (University of Montpellier).

M. Chaves is in the thesis committee of F. Fourré (University of Luxembourg).

O. Bernard is in the thesis committee of S. Bellini (University of Montpellier), and S. Mazeghrane (University of Montpellier).

9.3. Popularization and media

The activities related to biofuel and microalgae have generated many articles and broadcasts in the media: “Où en est-on des biocarburants de 2e et 3e générations?”, Le Monde.fr, October 19; “De la flore et du phosphore”, Libération, Novembre 18; “La filière microalgues reprend des couleurs en PACA”, La Tribune, March 19; “Vive le pétrole sur nos côtes”, Le Point.fr, May 3; “Mettez des microalgues dans votre moteur”, Sciences et avenir N^{O} 784 (June).

Aurélie Schmitt, “Ecole Nationale Supérieure de l’eau, l’énergie et l’environnement” student intern, has developed a *Java* applet using the AnyLogic software for the simulation of microalgae growth and biological pest control. The aim of the applet is for the general public to understand the goals and difficulties of controlling such systems [63].

Mélaine Gautier did a presentation at the Centre International de Valbonne for the ”Fête de la Science“ entitled ”Petits jeux des mathématiques pour représenter la vie, la lutte biologique, la croissance des plantes”, October 13.

P. Bernhard has given five conferences in high schools in the framework of the program “Sciences et culture au lycée”:

31/01/2012 Lycée Léonard de Vinci, Sophia Antipolis.

13/03/2012 Lycée technique de la montagne, Valdeblore.

12/04/2012 Lycée technique de la montagne, Valdeblore.

20/11/2012 Lycée Aristide Briand, Gap (two conferences)

and one conference to visiting Bahrain students (July 12) at Fondation Sophia Antipolis. He helped several high school pupils with their TIPE and in hosting younger highshool interns. He gave a seminar in Inria's "C@fé-in" on Game theory (October 22).

9.4. Conferences, invited conferences

Conferences cited in the bibliography are not repeated here.

O. Bernard was invited to give a conference on microalgae at the Coriolis Conference (Ecole Polytechnique), Paris (February 6), and at Ecole Centrale de Paris ("Défi biotechnologie") "Use of microorganisms for biofuel production" (October 25).

O. Bernard was invited to make a presentation at JojoFest to celebrate Georges Bastin's emeritus. (University of Louvain, Belgium, October 9). J.-L. Gouzé and F. Grognard also attended the JojoFest workshop

Pierre Bernhard gave a seminar in Inria Lille-Nord Europe and ENSAM Lille (October 18)

M. Chaves was invited to make a presentation on mathematical methods in bioinformatics at the 2012 ECFS conference - New Frontiers in Basic Science of Cystic Fibrosis, Special group discussion: New Approaches for Exploring the CFTR Interactome, Sainte Maxime, France (March 31).

CARMEN Team

7. Dissemination

7.1. Scientific Animation

- reviewing for (many) applied mathematics journals
- N. Zemzemi was an Invited speaker in *Workshop on Efficient Solvers in Biomedical Applications*. July 2-5, 2012 Graz, Austria.
- Leading the cardiac challenge group in *the 3rd VPH NoE Study Group*. Plenary session on Cardiac modeling challenges (1h) + 4 hours course (cardiac modeling, mathematical methods in cardiac elec-trphysiology, drug modeling and computational tools in cardiac electrophysiology). May 7-11, 2012. Barcelona, Spain.
- Invitation to give a presentation at the *Inria-Bcam workshop*, Bilbao, 2012.
- LAMSIN Seminar: 6 hours course on cardiac modeling for the EPIC groupe (*Équipe Proble`mes Inverses et Contrôle*), Forward and inverse problem in cardiac electrophysiology. June 18-21, 2012, Tunis, Tunisia.

Partial list of presentations given by the team members (besides the invitations above).

- *Printemps de la cardiologie*, March 2012.
- *Congrès d'Analyse Numérique* (CANUM), May 2012.
- *21st International Conference on Domain Decomposition Methods*. June 25-29 2012, Inria Rennes, Bretagne-Atlantique, France.
- *Computing in Cardiology 2012* conference. September 9-12 2012, Krakow, Poland.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Licence : Y. Coudière, Calcul scientifique : résolution des grands systèmes creux, 34.66 h eq. TD, L3, Université Bordeaux 1.

Master : Y. Coudière, Analyse numérique avancée, 36 h eq. TD, M2 Enseignant, titre du cours, nombre d'heures en équivalent TD, niveau (M1, M2), Université Bordeaux 1.

Licence : Simon Labarthe, probabilité et statistique, 22 h eq. TD, première année IUT, IUT HSE, Université Bordeaux 1.

Licence : Simon Labarthe, introduction aux bases de données, 24h eq. TD, première année IUT, IUT HSE, Université Bordeaux 1.

Licence : Enseignant, titre du cours, nombre d'heures en équivalent TD, niveau (L1, L2, L3), université, pays

Master : Enseignant, titre du cours, nombre d'heures en équivalent TD, niveau (M1, M2), université, pays

Doctorat : Enseignant, titre du cours, nombre d'heures en équivalent TD, université, pays

7.2.2. Supervision

PhD in progress : A. Davidovic, *Modelling the cardiac ventricular structural heterogeneities*, started on October 2012, supervised by M. Bendahmane and Y. Coudière.

PhD in progress : S. Labarthe, *Modélisation de l'activité électrique cardiaque dans les oreillettes et les veines pulmonaires*, started on October 2010, supervised by Y. Coudière and J. Henry.

PhD in progress : G. Ravon, *An inverse problem for cardiac optical mapping*, started on October 2012, supervised by Y. Coudière and A. Iollo.

7.2.3. Juries

- Y. Coudière Reviewer and member of the jury for defense of the PhD of J. Relan, *Personalised Electrophysiological Models of Ventricular Tachycardia for Radio Frequency Ablation Therapy Planning*, June 2012.
- Y. Coudière, supervisor and member of the jury for defense of the PhD of A. Uzureau, *Modélisations et calculs de la cicatrisation osseuse. Application à la modélisation d'un bioréacteur*, December 2012.
- Recruitment commitee for an associate professor position, University of Nice, June 2012.

7.3. Popularization

- Reception of the students from *Ecole Nationale des Ponts et Chaussées*, September 2012.
- Exposé *Unithé ou café*, June 12, 2012. Inria Bordeaux Sud-Ouest. France.

DRACULA Project-Team

9. Dissemination

9.1. Scientific Animation

The year 2012 was marked by the following events:

- The edition of 6 volumes of the journal MMNP (Mathematical Modelling of Natural Phenomena) on the following topics: cancer modeling, solitary waves, epidemiology, modelling phenomena on micro- and nano-scale, immunology, biological oscillations (see http://journals.cambridge.org/action/displayJournal?jid=MNP).
- The co-organization of a monthly seminar (INRIabcd, every last friday), jointly with Inria team BEAGLE, and the organization of a seminar on biomathematics (on thursday, twice a month) (see archives for 2012 : http://bsmc.insa-lyon.fr/~M3B/fr/seminaire.php?annee=2012).
- Organization of the Third International Conference of the Moroccan Society of Applied Mathematics (SM2A), Marrakesh, 10-13 September (see http://sm2a-2012.ucam.ac.ma/en/index.html).
- Organization of a workshop dedicated to "cell population dynamics", Tunis, 26-28 November 2012 (http://euromedbiomaths.org/atelier-M3CD-Tunis/).
- Organization of a summer school dedicated to the interactions between stochastic and deterministic approach for population dynamics, Paris, 06-14 September 2012 (see http://www.cmap.polytechnique.fr/~ecolemathbio2012/index.php).

9.2. Teaching - Supervision

9.2.1. Teaching

Licence : Thomas LEPOUTRE, Dynamique de populations, 12h, L3, ENS Lyon.

Licence : Thomas LEPOUTRE, Dynamique de populations structurées, 9h, L3, ENS Cachan, Paris.

Licence : Samuel BERNARD, Algèbre linéaire et analyse matricielle, 38h, L3, INSA Lyon.

Licence : Laurent PUJO-MENJOUET, EDP réaction-diffusion, 15h, L3, UCBL Lyon.

Licence : Laurent PUJO-MENJOUET, EDO-Systèmes dynamiques, 40h, L3, INSA Lyon.

Licence : Laurent PUJO-MENJOUET, Équations différentielles et EDP, 36h, L3, UCBL Lyon.

Licence : Laurent PUJO-MENJOUET, Fonctions de plusieurs variables, 36h, L2, UCBL Lyon.

Licence : Laurent PUJO-MENJOUET, Suite et série de fonctions, 36h, L2, UCBL Lyon.

Licence : Laurent PUJO-MENJOUET, Projet Etudiant, 09h, L2, UCBL Lyon.

Licence : Romain Yvinec, Équations différentielles Ordinaires, 18h, L2, UCBL Lyon.

Licence : Romain Yvinec, Mesure et intégration, 24h, L3, UCBL Lyon.

Licence : Philippe MICHEL, Analyse appliquée, 56h, L3, ECL Lyon.

Licence : Philippe MICHEL, Analyse numérique, 16h, L3, ECL Lyon.

Licence : Philippe MICHEL, Probabilités et statistique, 16h, L3, ECL Lyon.

Licence : Philippe MICHEL, Optimisation 16h en L3, ECL Lyon.

Licence : Philippe MICHEL, Projet d'études, 20h, L3, ECL Lyon.

Master : Thomas LEPOUTRE, Préparation à l'agrégation, calcul scientifique, 30h, M2, UCBL Lyon.

Master : Thomas LEPOUTRE, Equations de Hamilton Jacobi, 18h, M2, ENS Lyon.

Master : Fabien CRAUSTE, Equations structurées et hématopoïèse, 2h, M2, UCBL Lyon.

Master : Samuel BERNARD: Modélisation en biologie, 4h, M2, ENS Lyon.

Master : Laurent PUJO-MENJOUET, Modélisation en biologie et médecine, 4h, M2, ENS Lyon.

Master : Laurent PUJO-MENJOUET, EDP et modélisation, 30h, M1, INSA Lyon.

Master : Laurent PUJO-MENJOUET, Projets tutorés, 3h, M1, UCBL Lyon.

Master : Laurent PUJO-MENJOUET, Systèmes dynamiques, 27h, M1, UCBL Lyon.

Master : Laurent PUJO-MENJOUET, EDP et Structures biologiques, 18h, M2, UCBL Lyon.

Master : Laurent PUJO-MENJOUET, EDP pour l'hématopoïèse, 18h, M2, UCBL Lyon.

Master : Romain YVINEC, Equations de transport en biologie, 12h, M2, UCBL Lyon.

Master : Philippe MICHEL, Algorithmes pour la décision en entreprise, 16h, M2, ECL Lyon.

Master : Philippe MICHEL, Mathématiques appliquées à la biologie, 20h, M1, ECL Lyon.

Master : Philippe MICHEL, Systèmes embarqués collaboratifs, 12h, M1, ECL Lyon.

Master : Philippe MICHEL, Projet Application - Recherche, 10h, M1, ECL Lyon.

9.2.2. Supervision

PhD : Erwan Hingant, Contributions à la modélisation mathématique et numérique de problèmes issus de la biologie - Applications aux Prions et à la maladie d'Alzheimer, Université Claude Bernard, Lyon 1, September 17th 2012, co-advised by Ionel Sorin Ciuperca and Laurent Pujo-Menjouet.

PhD : Emmanuelle Terry, Modélisation mathématique des dynamiques de la réponse immunitaire T CD8, aux échelles cellulaire et moléculaire, Université Claude Bernard, Lyon 1, October 12th 2012, co-advised by Fabien CRAUSTE and Olivier GANDRILLON.

PhD : Romain Yvinec, Modélisation probabiliste en biologie moléculaire et cellulaire, Université Claude Bernard, Lyon 1, October 05th 2012, co-advised by Mostafa Adimy and Laurent Pujo-Menjouet.

PhD : Latifa Bouguerra, University of Alger, Algerian government scholarship, started October 2012, co-advised by Mostafa Adimy and Rachid Boudchich.

PhD : Youssef Bourfia, University of Marrakech, IRD grant, started October 2010, co-advised by Mostafa Adimy and Hassan Hbid.

PhD : Abdennasser Chekroun, ICJ UMR 5208, Lyon 1, Algerian government scholarship, started October 2012, advised by Mostafa Adimy.

PhD : Raouf El Cheikh, ICJ UMR 5208, Lyon 1, salarié, started October 2011, advised by Samuel Bernard.

PhD : Nathalie Eymard, ICJ UMR 5208, Lyon 1, salariée, started October 2009, advised by Vitaly Volpert.

PhD : Mohamed Helal, University of Sidi Bel Abbes, Algeria, Algerian government scholarship, started October 2011, co-advised by Laurent Pujo-Menjouet and Abdelkader Lakmeche.

PhD : Marine Jacquier, ICJ UMR 5208, Lyon 1, started October 2012, co-advised by Mostafa Adimy and Fabien Crauste.

PhD : Lila Sebaa, University of Alger, Algerian government scholarship, started October 2009, co-advised by Mostafa Adimy and Rachid Boudchich.

PhD : Alen Tosenberger, ICJ UMR 5208, Lyon 1, advised by Vitaly Volpert.

9.3. Popularization

Thomas Lepoutre is a member of the website Images des Mathématiques (see, http://www.cmap.polytechnique.fr/~ecolemathbio2012/index.php), reviewing press articles concerning mathematics. He also participated to the programm MathaLyon, spending one day in Collège de l'Isle à Vienne (38), animating Mathematical stands for students.

MACS Project-Team

8. Dissemination

8.1. Scientific Animation

Dominique Chapelle

- Associate editor of international journals Computers & Structures and M2AN
- Guest editor-in-chief (with J.-F. Gerbeau) for M2AN special issue “Direct and inverse modeling of the cardiovascular and respiratory systems”
- Frequent reviewer for journals Computer Methods in Applied Mechanics and Engineering, IJNME
- Program committee of conference “Functional Imaging and Modeling of the Heart 2013”
- Invited lecturer at Mayneord-Phillips Summer School (Oxford, 2–6 July 2012)
- Invited seminars at ETH-Zürich 17/10, CMAP (Ecole Polytechnique) 13 Nov.

Philippe Moireau

- Reviewer this year for M2AN BMMB and EJSOL journals and the American Control Conference
- Project expert reviewer this year for the ANR and the Region Aquitaine
- Invited lecturer at Mayneord-Phillips Summer School (Oxford, 2–6 July 2012) on “Parameter calibration and identification for the cardiovascular system”
- Invited lecturer at Medisys Lab - Philips Research Seminar on “Joint state-parameter estimation for PDEs by observer and optimal filtering strategies”
- Speaker at “PICOF 2012” Conference on “Improving Numerical Analysis Using Observers - the Second-Order Hyperbolic Case”

Alexandre Imperiale

- Speaker at “CANUM 2012” Conference on “Numerical convergence of semi-discrete time and space under-sampled observers for vibrating systems. Application to the wave equation”, May 2012
- Speaker at Medisys Lab - Philips Research Seminar on “Methodological framework for estimation in a cardiac model using tagged-MR images”, July 2012
- Speaker at Inria-Rocquencourt Junior Seminar on “Concepts of data assimilation in cardiac modeling”, April 2012

Annabelle Collin

- Poster at “CANUM 2012” Conference on “A surface-based electrophysiological model motivated by cardiac atria modeling and relying on asymptotic considerations”, May 2012
- Speaker at Junior Seminar Marne-La-Vallée on “A surface-based electrophysiology model relying on asymptotic analysis with physiological simulations”, November 2012

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Philippe Moireau

Bachelor degree: “MA103 - Introduction aux EDP et à leur approximation numérique”, 14h, M1, ENSTA ParisTech, France

Master: “MA201 - La méthode des éléments finis”, 14h, M2, ENSTA ParisTech, France

Annabelle Collin

Bachelor degre: "Sequences, series, integration" , UPMC, spring 2012

Bachelor degree: "Linear algebra", UPMC, fall 2012

8.2.2. Supervision

PhD & HdR :

Master internship: Alexandre Routier, “Image-based observation operators for data assimilation in cardio-mechanics using currents”, INSA Rouen, june-october 2012, Advisors: A. Imperiale and P. Moireau

Master internship: Silvia Rosellini, “Towards a finite element mesh of a complete human heart”, Pisa University, june-october 2012, Advisor: A. Collin

PhD in progress: Annabelle Collin, “Dimensional reduction and electro-mechanical coupling for the modeling of electrophysiology and muscle contraction”, UPMC, started September 2011, advisors D. Chapelle and J.-F. Gerbeau

PhD in progress: Alexandre Imperiale, “Image-based observation operators for data assimilation in cardio-mechanics”, UPMC, started October 2010, advisors D. Chapelle and P. Moireau

PhD defended in May: Daniele Trimarchi, “Analysis of downwind sail structures using non-linear shells finite elements – Wrinkle development and fluid interaction effects”, University of Southampton, co-supervision D. Chapelle

8.2.3. Juries

Dominique Chapelle

- Thesis committee chairman: R. Sheshka, Ecole Polytechnique, 21 Sept.
- Thesis committee: D. Lopez, Ecole Polytechnique, 15 Oct.
- Thesis committee: C. Bertoglio, UPMC, 23 Nov.

8.3. Popularization

Dominique Chapelle

- Participation to an interview on “la Météo du Coeur” for new site inriality
- Speaker in “Débat citoyen” (Inria-Saclay, 19/11)
- Participation in “Rencontre Inria Industrie” on numerical simulation for medicine (Strasbourg, 21/11)

Philippe Moireau

- Participation to an interview on “la Météo du Coeur” for new site inriality

Annabelle Collin

- Best Poster Award at “CANUM 2012” Conference on “A surface-based electrophysiological model motivated by cardiac atria modeling and relying on asymptotic considerations”

MASAIE Project-Team

8. Dissemination

8.1. Scientific Animation

8.1.1. International conferences

8.1.1.1. CIMPA School

A. Iggidr is one of the three scientific directors and organizers of a CIMPA-UNESCO-MESR-MICINN-MOROCCO research School, held in Casablanca, October 1-12 : EpiCasa12 – Introduction to epidemiology: mathematical and statistical models and methods.
G. Sallet was also one of the lecturers.
This research school aims at providing the basic notions in epidemiology and modelling to students, or researchers, in mathematics and statistics, so that they can apply their knowledge to solve practical problems, that is:

to understand scientific papers describing experiments or data acquisition in epidemiology, or dealing with mathematics applied to epidemiology;

to perform classical data analyses;

to model a simple epidemiological problem;

to participate in research projects in epidemiology together with biologists.

8.1.1.2. Conference Saint-Louis

MASAIE and University of Gaston Berger have organized a conference in honor of Gauthier Sallet in Saint-Louis (Senegal) from December 3 to 7, 2012 (http://www.ugb.sn/?option=com_content&view=article&id=217). This conference was preceded by a school (November 29-30).
The scientific committee was composed of Julien Arino, Pierre Auger, Jean-Michel Coron, Jean-Luc Gouze, Claude Lobry, Mary-Teuw Niane, Michel Langlais, Hamidou Touré. The conference was sponsored by Inria, IRD, UGB, MESR Senegal. More than 50 participants from control theory, population dynamics and epidemiology participated to these events. The journal "Mathematical Control and Related Fields (MCRF)" will offer a special issue in connection to the Conference in honor of G. Sallet.

8.1.2. Expertise, scientific animation

G. Sallet was expert to synthesize all the studies carried out in WorkPackage 3, “Modelling and Simulations”, WP leader Dr. Yves Dumont (CIRAD – AMAP). 25th March until 5th April at the CRVOI, La Réunion Island

G. Sallet gives conferences in the network M3D (Mathématiques et Décision pour le Développement Durable) : Structuration dans les modèles épidémiologiques. May 7-10, 2012. Oleron (http://reseau-m3d.fr/)

G. Sallet was invited by UMMISCO IRD and GRIMCAPE (LIRIMA) as an expert to participate to "modélisation mathématique des maladies infectieuses en contexte forestier". September 25-29, 2012.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master : G. Sallet, ODE and mathematical epidemiology, 30h, M2, Universite Gaston Berger (Saint-Louis), Senegal.

8.2.2. Supervision

Phd Berge Tsanou (MASAIE),

Sandwich these (UPVM-université de Yaoundé I, Cameroun).

Etude de quelques modèles épidémiologiques de métapopulations : application au paludisme et à la tuberculose. Université de Lorraine, Metz, January, 13, 2012.

Phd : Josephine Wairimu Kagunda (MASAIE)

Sandwich these (UPVM-université Nairobi, Kenya).

Mathematical Analysis and Dynamical Systems Modeling of Highland Malaria in Western Kenya. Université de Lorraine, Metz, November, 23, 2012.

Phd : Leontine Nkague Nkamba (MASAIE)

Sandwich these (UPVM-université Gaston Berger Saint-Louis, Senegal).

Robustesse des Seuils en Épidémiologie et Stabilité Asymptotique d'un Modèle à Infectivité et Susceptibilité Différentielle. Université de Lorraine, Metz, November, 23, 2012.

Phd in progress : Derdei Bichara. Application de la théorie des observateurs à l'identification des paramètres de modèles épidémiologiques. Estimated date defence : February 2013

Phd in progress: Lena Tendeng. Modélisation de la bilharziose et validation de modèles. Estimated date defence : March 2013

MODEMIC Project-Team

9. Dissemination

9.1. Animation of the scientific community

- A. Rapaport is presently the head of the UMR INRA-SupAgro MISTEA (Mathematics, Informatics and STatistics for Environment and Agronomy) where the team is housed. A. Rapaport is: member of the piloting board of the "modelling" axis of the LabEx Numev (Digital and Hardware Solutions, Modelling for the Environment and Life Sciences)) at Montpellier; member of the scientific board of the "Ecotechnologies" department of IRSTEA; member of the scientific board of the "BIOS" department of CIRAD. A. Rapaport has been the president of the AERES visiting committee of the Research team "MOTIVE" of IRSTEA.
- F. Campillo is member of the NICE (long term invited scientists selection); deputy elected member of the Inria Scientific Council; member of the internal communication working group of Inria Sophia Antipolis. F. Campillo was member of the INRA selection board for the selection of junior scientists (statistics and modelling).
- J. Harmand is the responsible for the treasure-2 network (a 3+3 Euromed project) that has been accepted for funding for the next 4 years); member of the scientific council of the Environment and agronomic INRA department; member of the advisory board of the INRA metaprogram MEM (Meta-omic and Microbial Ecosystems); member of the INRA evaluation commission STEA ("Sciences de la Terre, de l'eau et de l'atmosphère"). J. Harmand is member of the steering committee of the MEM INRA metaprogram. J. Harmand is member of the scientific committee of the INRA Environment and Agronomy department.
- J. Harmand and A. Rapaport are responsible of the INRA network MODYM (MOdèles DYnamiques et Métabolites) sponsored by the Applied Mathematics and Informatics Departement (MIA) of INRA.
- B. Haegeman is Academic Editor for PLoS ONE.

9.2. Seminars and schools

The MODEMIC project-team animates several seminars:

- The MODEMIC seminar on mathematical modelling [http://www-sop.inria.fr/modemic/seminaire/].
- I3M and MODEMIC working group on stochastic models for ecology and biology [http://www-sop.inria.fr/modemic/personnel/campillo/GT-modelisation.html]; this working group is supported by the "laboratory of excellence" (LabEx) NUMEV (Digital and Hardware Solutions, Modelling for the Environment and Life Sciences).
- A new seminar SAMOCOD on Optimisation, Control and Dynamics bilocated at Montpellier and Avignon will be launched in January 2013 [http://ens.math.univ-montp2.fr/SPIP/sem.php3?a=programme&sem=61]. A. Rapaport is member of the organizing committee.

9.3. Teaching

- F. Campillo and M. Joannides have given a 20 hours lecture on "Stochastic modelling of ecosystems" at the Master 2 in Biostatistics in Université de Montpellier II.
- A. Rapaport has given a 25 hours lecture on differential equations with applications in the "Practical Mathematics" module for 1st year students in MSc in Mathematics at University Montpellier II.
- C. Casenave, F. Campillo, J. Harmand and A. Rapaport are in charge of two modules in the new MSc program "STIC - Environnement" at University Montpellier II:
  - Introduction to mathematical modelling, master I (50 hours)
  - Advanced mathematical modelling, master II (75 hours)
- C. Casenave, F. Campillo and A. Rapaport have delivered a 20 hours doctoral module at University Montpellier II, entitled "Modelling for biology and ecology – mathematical and computational methods".
- A. Rapaport and T. Bayen have given six lectures on mathematical modelling for 1st year students of SupAgro Montpellier.
- A. Rapaport has given two lectures on Modelling and numerical simulations at the "EcoSystèmes" Master at University of Montpellier II.

9.4. PhD's

Defended thesis:

- Boumediène Benyahia, "Modélisation et contrôle de bioréacteurs à membrane"; grant: Coadvise and Treasure; thesis in co-supervision Montpellier-Tlemcen (Algeria); started in October 2008; advisors: J. Harmand and B. Cherki (Tlemcen, Algeria).

Theses in progress:

- Mamadou Lamine Diagne, "Modélisation mathématique du Typha"; grant: AUF; thesis in co-supervision Mulhouse-Saint Louis (Senegal); started in October 2009; advisors: T. Sari and M.T Niane (Saint Louis, Senegal).
- Radhouene Fekih-Salem, "La compétition et la coexistence dans le Chemostat"; grant: Averroes; thesis in co-supervision Montpellier-Tunis; started in October 2010; advisors: A. Rapaport, T. Sari and N. Gmati (Tunis).
- Walid Bouhafs, "Commande optimale des réacteurs séquentiels discontinus"; grant: Université Tunis Carthage; thesis in co-supervision Montpellier-Tunis; started in October 2010; advisors: J. Harmand, F. Jean (ENSTA-ParisTech, Paris) and Nahla Abdellatif (Tunis, Tunisia).
- Amel Ghouali, "control en tamps minimal des réacteurs de digestion anaérobie"; grant: Averroes; thesis in co-supervision Montpellier-Tlemcen (Algeria); started in October 2011; advisors: J. Harmand and A. Moussaoui (Tlemcen, Algeria).
- Sonia Hassam, "Réduction de modèles de la digestion anaérobie"; grant: Univ. Tlemcen; started in October 2010; advisors: J. Harmand and B. Cherki (Tlemcen, Algeria).
- Angelo Raherinirina, "Modélisation markovienne de dynamique d'usage des sols"; grant: AUF, SCAC Madagascar, LIRIMA; started March 1st 2009; advisors: F. Campillo and R. Rakotozafy (Univ. Fianarantsoa Madagascar).
- Coralie Fritsch, "Simulation et analyse de modèles individu-centrés d'écosystèmes bactériens pour des procédés biotechnologiques", école doctorale I2S; grant: INRA Metaprogram MEM and Univ. Montpellier II; started October 1st 2011; advisors: F. Campillo, J. Harmand.
- Guilherme Pimentel, "Modelling and control of bioreactors with membrane"; grant: Univ. Mons (Belgium) and INRA; thesis in co-supervision Montpellier-Mons; started October 2011; advisors: A. Rapaport, J. Harmand and A. VandeWouver (Univ. Mons).
- Amine Charfi, "Modélisation du colmatage dans les réacteurs à membranes" grant: Coadvise and University of Tunis; started October 2009; advisors: J. Harmand and Nihel Benamar.

9.5. Participation to thesis committees

- F. Campillo (referee): M. Jean-Louis Marchand, “Conditionnement de processus markoviens”, Univ. de Rennes 1.
- F. Campillo (referee): M. Quentin Molto, “Estimation de biomasse en forêt tropicale humide Propagation des incertitudes dans la modélisation de la distribution spatiale de la biomasse en Guyane française”, Univ. des Antilles et de la Guyane.
- J. Harmand (referee): M. Thomas Guélon, “Déterminer l’influence de la distribution spatiale des bactéries sur les propriétés microscopiques de biofilms bactériens par des techniques d’homogénéisation”, Univ. Blaise Pascal, Clermont II.
- J. Harmand, T. Sari, C. Lobry (president of the committee): M. Boumediene, “Modélisation et observation des bioprocédés à membranes : application à la digestion anaérobie”, Univ. Montpellier 2 and Univ. Tlemcen, Algérie.
- A. Rapaport (president of the committee): M. Sebbah, “Stabilité d’inégalités variationnelles et prox-régularité, équations de Kolmogorov périodiques contrôlées” , Univ. Montpellier II.
- A. Rapaport (referee and president of the committee): Léontine Nkague Nkamba, “Robustesse des seuils en épidémiologie et stabilité asymptotique d’un modèle à infectivité et susceptibilité différentielle”, Univ. Metz and Univ. St-Louis du Sénégal.
- C. Lobry (president of the committee): Jonathan Rault “Modélisation structurée en taille du zooplancton” UNSA.

NUMED Project-Team

9. Dissemination

9.1. Scientific Animation

Vincent Calvez organizes mathematical researches visit and talks to high schools students.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence : Enseignant, titre du cours, nombre d'heures en équivalent TD, niveau (L1, L2, L3), université, pays

Master : Enseignant, titre du cours, nombre d'heures en équivalent TD, niveau (M1, M2), université, pays

Doctorat : Enseignant, titre du cours, nombre d'heures en équivalent TD, université, pays

9.2.2. Supervision

PhD & HdR :

PhD : Floriane Lignet, Etude de modèles mathématiques de l'angiogenèse, Université de Lyon, novembre 2012, E. Grenier and B. Ribba.

PhD in progress : Pauline Mazzocco, Modèles mathématiques de survie, 2012, B. Ribba

9.2.3. Juries

E. Grenier has taken part to different phD juries.

9.3. Popularization

Paul Vigneaux is in the editorial board of the vulgarization website "Image des Maths".

REO Project-Team

8. Dissemination

8.1. Scientific Animation

- Laurent Boudin
  - Member of the Board of Mathematics Licence (*EFU de Licence de mathématiques*), UPMC.
  - Co-organizer of the monthly workgroup "Humaniste" focusing on mathematics applied to humanities, alternatively taking place at UPMC, UP7D and Orléans and jointly handled by LJLL, MAPMO and CAMS.
- Miguel Ángel Fernández Varela
  - Member of the Postdocs Selection Committee, Inria Paris-Rocquencourt, 2012
- Jean-Frédéric Gerbeau
  - Member of the editorial boards of Mathematical Modelling and Numerical Analysis (M2AN), International Journal for Numerical Methods in Biomedical Engineering (IJNMBE), Communications in Applied and Industrial Mathematics.
  - Service activity at Inria: Délégué Scientifique / Chairman of the project-teams' committee of Inria Paris-Rocquencourt research center; Member of the evaluation committee of Inria
  - Service activity in Universities: Member of the Mathematics Faculty Concil of University P. & M. Curie Paris 6 (conseil de l'UFR 929); member of the scientific committee of the Faculty of Science, University Versailles Saint-Quentin; member of the Reference Committee of the PhD program Mathematical Models and Methods in Engineering (Politecnico di Milano, Italy);
- Céline Grandmont
  - Member of the CNU 26 (2011–2015)
- Elisa Schenone
  - Co-organizer of the monthly Junior Seminar of Inria Paris-Rocquencourt
- Marc Thiriet
  - President of thematic comittee CT3 (Biomedical Simulation and Applications to Health) of GENCI (Grand Equipement National de Calcul Intensif – National Large Equipement for Intensive Computation)
  - PRACE peer review staff member (Panel 4 [Biochemistry, Bioinformatics and Life Sciences])
  - Member of the Mechanical Engineering Evaluation Group of the Canadian Granting Agency NSERC
  - Member of the Scientific Committee of the PME DiscInNet
- Marina Vidrascu
  - Member of the Postdocs Selection Committee, Inria Paris-Rocquencourt, 2011
- Irène Vignon-Clementel
  - Organizing the monthly seminar at Inria Paris-Rocquencourt on "modeling and scientific computing"

  - Inria: member of the "Conseil d'orientation scientifique et technologique" (scientific and technologic orientation council) of l'Inria, in the subgroup "GT Actions Incitatives" (incentive action working group), PhD grant committee
  - Mediator between PhD students and their supervisors for Inria Paris-Rocquencourt
  - Coordinator of the associated team CARDIO between REO and Prof. Taylor's lab at Stanford University, USA and colleagues both at Inria and in the USA (2008-present)

Conferences

- Grégory Arbia
  - Poster, 3rd annual conference on engineering frontiers in pediatric and congenital heart disease, Stanford University, May 2012.
  - Seminar, Laboratoire de Mathématiques appliquées, Univ. Paris 5, June 2012.
- Cristóbal Bertoglio Beltran
  - Contributed talk at 10th International Symposium Computer Methods in Biomechanics and Biomedical Engineering, April 11- 14th, 2012, Berlin, Germany
- Laurent Boudin
  - Seminar, Mapmo, Univ. Orléans, France, February 2012.
  - Seminar, ACSIOM, Univ. Montpellier-II, France, March 2012.
  - Seminar, LAGA, Univ. Paris-Nord, France, March 2012.
  - Colloquium, MAP5, Univ. Paris-Descartes, France, June 2012.
  - Contributed talk, HYP'2012, Padova, Italy, June 2012.
- Muriel Boulakia
  - Seminar, Univ. Metz, march 2012
  - Seminar, Univ. Paris-sud, may 2012
  - Invited speaker, Workshop Control of fluid-structure systems,Toulouse, june 2012
  - Invited speaker, Congrès Random Models in Neurosciences, Paris, july 2012
  - Evaluation talk, AERES evaluation, november 2012
- Paul Cazeaux
  - Seminar, REO team, Inria Paris-Rocquencourt, April 2012
  - Poster, CANUM 2012, Superbesse, Mai 2012
  - Contributed talk, ECCOMAS conference, Vienna, Austria, September 2012
  - Seminar, Homogenization and multiple scales, UPMC Paris 6, November 2012
  - PhD students Seminar, LJLL, UPMC Paris 6, November 2012
- Cesare Corrado
  - Contributed talk at Bioengineering 2012, Oxford, 6-7 September 2012 (with J-F. Gerbeau, P. Moireau),
- Anne-Claire Egloffe
  - PASI-CIPPDE 2012, Inverse problems and PDE control. Santiago, Chili, January 2012.
  - Seminar, University of Besanon, May, 2012.
  - Seminar, Institut Elie Cartan, Nancy, May, 2012.
- Miguel Ángel Fernández Varela
  - Seminar, Basque Country University, March 12, Bilbao, Spain
  - Seminar, Weierstrass Institute, April 19, Berlin, Germany
  - Invited talk at minisymposium, CANUM 2012, May 21-25, Superbesse, France

  - Keynote speaker at minisymposium, ECCOMAS 2012, September 10-14, 2012, Vienna, Austria
  - Seminar, University of Besanon, September, 2012, France
  - Seminar, University of Granada, October 16, 2012, Spain
  - Seminar, University of Sevilla, October 17, 2012, Spain
  - Seminar, University of Zaragoza, October 18, 2012, Spain
  - Seminar, Polytechnic University of Madrid, October 19, 2012, Spain
- Justine Fouchet-Incaux
  - Contributed talk Rencontres doctorales de l'IMREDD, Institut Mé diterranéen du Risque, de l'Environnement et du Développement Durable, Nice, oct. 2012
  - PhD students seminar, Orsay, nov. 2012
  - CEMRACS'12, Marseille, juil. 2012
- Jean-Frédéric Gerbeau
  - Invited conference, Rencontre iDySCo (Institut Dynamique des Systèmes Complexes), Villard de Lans, January 9-10, 2012
  - Invited conference, Printemps de la cardiologie, Bordeaux, April 12-13, 2012
  - Invited conference, 1st Usergroup Workshop of the Notocord company, Paris, June 7-8, 2012
  - Invited conference, CECAM Workshop: Reduced Order Methods for modeling and computational reduction, Switzerland, May 14-16, 2012
  - Invited minisymposium talk, UK Bioengineering conference, Oxford, September 24-25, 2012
  - Seminar, Journée Calcul Scientifique et Modélisation Mathématique d'Amiens, 2012
  - Seminar, Groupe Medisys, Philips, Jan 3, 2012
- Céline Grandmont
  - Invited speaker, Journées MIRES EDP, October 2012
  - Plenary conference, XIème colloque franco-roumain de mathématiques appliquées, August 2012
  - Invited speaker, Workshop Control of fluid-structure systems and inverse problems, June 2012
  - Plenary conference, CANUM 2012, Super Besse, May 2012
  - Seminar, Lyon, January 2012
- Bérenice Grec
  - Seminar, Applied Mathematics, Univ. Blaise Pascal, March 15, 2012, Clermont-Ferrand, France
  - Journée Mathématiques et Biologie du PRES Sorbonne Paris Cité, April 5, 2012, Paris, France
  - Seminar, PDEs, Univ. Strasbourg, June 19, 2012, Strasbourg, France
- Sébastien Martin
  - Poster, Congrès National de Physiologie Pharmacologie et Thérapeutique, Dijon 2012
  - Seminar, DAMTP: Applied and Computational Analysis, University of Cambridge, UK, 2012
  - Contributed talk, CANUM 2012, Superbesse, France.
  - Contributed talk, Softflow 2012: Biological complex fluids, Cargèse, 2012.

  - Invited talk, Workshop on Complexity in Fluid Mechanics, Vienna, Austria 2012.
- Ayman Moussa
  - Contributed talk at the Spring School on Kinetic Theory and Fluid Mechanics, March 26-30th 2012 Université Claude Bernard, Lyon.
  - Workshop on Kinetic Equations, 21th June 2012, ENS Cachan
- Elisa Schenone
  - Poster, CANUM 2012, Superbesse, May 2012
  - CEMRACS 2012, Cirm-Marseille, 16/07-24/08, 2012
- Saverio Smaldone
  - Contributed talk 10th World Congress on Computational Mechanics (WCCM 2012) 8 -13 July 2012, São Paulo, Brazil
  - Contributed talk 6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012) 10-14 September 2012, University of Vienna, Austria.
  - Seminar, Inria-Rocquencourt, November 20th, Le Chesnay, France
- Marc Thiriet
  - Plenary Conference, CMMBE 2012, 10th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, 11–14 april 2012, Berlin, Germany
  - Contributed talk International Union of Theoretical and Applied Mechanics (IUTAM) Symposium on Particle Methods in Fluid Mechanics, October 15–17, 2012 Lyngby, Denmark (with Chatelin R, Poncet P, Didier A, Murris-Espin M, Anne-Archard D)
  - Contributed talk 12TH International Symposium on Therapeutic Ultrasound, , 10–13 June, 2012, Heidelberg, Germany, (with Maxim A. Solovchuk, Tony W. H. Sheu)
- Marina Vidrascu
  - Contributed talk 10th World Congress on Computational Mechanics (WCCM 2012) 8 -13 July 2012, São Paulo, Brazil
  - Invited conference, XIème colloque franco-roumain de mathématiques appliquées, August 2012
  - Contributed talk 21st International Conference on Domain Decomposition Methods, 25-29 June, Inria Rennes-Bretagne
  - Seminar, Univ Caen (France)
- Irène Vignon-Clementel
  - Seminar, Mathematical modeling in Medicine workshop, Laboratoire de Mathématique, March 12th 2012, U. Versailles Saint Quentin, France
  - Invited lecture at the Spring school 2012 on systems biology, March 30th 2012, HelmholzZentrum München, Germany
  - Contributed talk, 10th International Symposium on Biomechanics and Biomedical Engineering, April 11th-14th, Berlin, Germany
  - Invited poster, 3rd International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease, May 1rst-2nd 2012, Stanford University, USA
  - Invited talk, BIS'2012 workshop, May 22nd, Paris, France
  - Contributed talk co-authored N. Jagiella and D. Drasdo, SBMC conference, July 9th-11th, Leipzig, Germany
  - Invited keynote at a minisymposium, ECCOMAS, 10th-14th September, Vienna, Austria [cancelled due to personal reasons]
  - Invited talk, Cancersys kickoff meeting, PI presentation of Lungsys consortium, October 8th-9th 2012, Heidelberg, Germany
  - Seminar, Laboratoire Jacques Louis Lions, Paris 6 UPMC, November 19th, 2012, France

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

DUT :

- Justine Fouchet-Incaux Algorithmiques et langages, 36h, IUT d'Orsay, département informatique, Université Paris-Sud
- Justine Fouchet-Incaux Mathématiques S2, 25,5h, IUT d'Orsay, département Mesures-Physiques, Université Paris-Sud
- Justine Fouchet-Incaux Mathématiques S1, 24h, IUT d'Orsay, département Chimie, Université Paris-Sud

Licence :

- Grégory Arbia Algèbre 1: calcul vectoriel, 36h, L1, UPMC.
- Grégory Arbia Calcul matriciel numérique, 24h, L3, UPMC.
- Laurent Boudin: Series and integrals (15h), L2, UPMC.
- Laurent Boudin: Multivariable calculus and multiple integrals (72h), L2, UPMC.
- Laurent Boudin: Hilbert analysis (16h), L3, Polytech'Paris.
- Paul Cazeaux Algebra 1, vectorial calculus, 72h, L1, UPMC Paris 6
- Paul Cazeaux Analysis 1, Functions, 36h, L1, UPMC Paris 6
- Anne-Claire Egloffe: Fonctions de plusieurs variables et intégrales multiples, L2, (36 h), UPMC
- Anne-Claire Egloffe: Khôlles Séries et intégrales, L2 (20 h), UPMC
- Ayman Moussa, Numerical Methods for differential equations (36h), L3, UPMC.
- Ayman Moussa, Introduction to Numerical Analysis oral exams, (15h), L3, UPMC.
- Miguel A. Fernández Scientific computing, 30h, level L3, École des Ponts ParisTech, France.
- Muriel Boulakia Vector calculus (24h), L1, UPMC, France
- Muriel Boulakia Linear optimization and convexity (36h), L3, UPMC, France.
- Muriel Boulakia Hilbertian analysis (30h), L3, Polytech'Paris, France
- Irène Vignon-Clementel Mathematics for biology, 64h ETD, L1 - undergraduate, Univ. de Versailles Saint Quentin

Master :

- Laurent Boudin: Numerical analysis (8h), M1, Polytech'Paris.
- Laurent Boudin: Basics for numerical methods (32h), M1, UPMC.
- Ayman Moussa, Real Analysis (72h), M1, UPMC.
- Ayman Moussa, Numerical analysis (38h), M1, Polytech'Paris.
- Ayman Moussa, Revision lecture on analysis and linear algebra (50h), M1, AIMS-Sénégal.
- Marc Thiriet Biofluid flows, 12 h. M2, UPMC
- Miguel A. Fernández Numerical methods in bio-fluids, 6h, level M2, University of Vigo, Spain.
- Miguel A. Fernández Inverse problems, 44h, level M1, Ecole Supérieure d'Ingénieurs Léonard de Vinci
- Muriel Boulakia Approximation methods for partial differential equations (72h, taught in english), M1, UPMC, France

- Muriel Boulakia Preparatory course for teaching admission examination Agrégation (15h), M2, UPMC, France
- Irène Vignon-Clementel Modeling Techniques, 24h ETD, M1, Univ de Versailles Saint Quentin.
- Irène Vignon-Clementel Different types of model for blood flow simulations, within the course Mathematics modeling for biology, 5h ETD, M1, Ecole Centrale Paris
- Apport des mathématiques appliquées (30min) "Diplôme universitaire de Médicine" on percutaneous valvular replacement, May 25th, Paris, France.

Others

- Ecole de printemps - Marrakech (LAMAI, FST) : Marc Thiriet Mathématiques & Interactions (6h)
- Ecole d'été - Roscoff (ICS, UPMC) : Marc Thiriet Biomathematics & Bioinformatics (12h)
- Biomathematical and Biomechanical Modeling and Simulation, Marc Thiriet (L3) Dpts of Mathematics, Computer Sciences, Physics, and Biology, 20h, Tbilisi State University (TSU)
- Laurent Boudin Supervisor (for mathematics) of the bidisciplinary computer science / applied mathematics licence program and of the joint program UPMC-Brown on computer science / applied mathematics at the licence level (18h).
- Irène Vignon-Clementel Numerical simulations of blood flow, 1h30, as part of the undergraduate continuum mechanics class at AgroParisTech, France

8.2.2. Supervision

PhD : Cristóbal Bertoglio Beltran, *Forwar and Inverse problems in fluid-structure interaction. Application in hemodynamics*, 23 November 2012. Supervisors: J-F. Gerbeau & M.A. Fernández Varela.

PhD : Paul Cazeaux, *Homogenization and lungs modelling*,12 December 2012 Supervisors: C. Grandmont & Y. Maday

PhD : Anne-Claire Egloffe, *Inverse problems in lungs modelling*, 19 October 2012. Supervisors: C. Grandmont & M. Boulakia.

PhD : Sofiene Hendili, *Structures élastiques comportant une fine couche d'hétérogénéités : étude asymptotique et numérique*, 4 July 2012. Supervisors: F. Krasucki & M. Vidrascu.

PhD in progress : Grégory Arbia, *Multi-scale Modeling of Single Ventricle Hearts for Clinical Decision Support*, since October 2010. Supervisors: J-F. Gerbeau & I. Vignon-Clementel.

PhD in progress : Justine Fouchet-Incaux, *Mathematical and numerical modeling of the human breathing*, since October 2011. Supervisors: C. Grandmont & B. Maury.

PhD in progress :Stéphane Liwarek, *Air flow in the nasal cavity*, since October 2010. Supervisors: M.A. Fernández & J-F. Gerbeau

PhD in progress : Jimmy Mullaert, *Fluid-structure interaction*, since September 2009. Supervisors: M.A. Fernández & Y. Maday

PhD in progress : Elisa Schenone, *Inverse problems in electrocardiology*, since October 2011. Supervisors: J-F. Gerbeau & M. Boulakia.

PhD in progress : Saverio Smaldone, *Numerical methods for cardiac hemodynamics*, since October 2010, Supervisors: J-F. Gerbeau & M.A. Fernández.

8.2.3. Juries

- Laurent Boudin

  - Member of the PhD committees of Phung Thanh-Tam (University Orléans, July 2012).
- Muriel Boulakia
  - Hiring committees: Univ. Caen, Univ. Versailles, Univ. P. & M. Curie (MCF positions)
- Miguel Ángel Fernández Varela
  - Member of the PhD committees of M. Pozzoli ((referee), Politecnico di Milano, Italy); A. Fumagalli (Politecnico di Milano, Italy), M. Pischiutta (Politecnico di Milano, Italy), V. Vitelli (Politecnico di Milano, Italy) and C. Bertoglio (University Paris VI) and B. Fabrèges (University Orsay Paris-Sud)
- Jean-Frédéric Gerbeau
  - Member of the PhD committees of Alistair Brown (Sheffield university (referee)) , Cristóbal Bertoglio (University Paris VI)
  - Hiring committees: Univ Montpellier (Professor position), Inria (DR2).
- Céline Grandmont
  - Member of the PhD committees of S. Court ((president of the jury) University Toulouse); A.-C. Egloffe (University Paris VI) and P. Cazeaux (University Paris VI)
  - Member of the HDR committees: of O. Saut ((referee) University Bordeaux Univ.); S. Martin (University Orsay Paris-Sud)
  - Hiring committees: Bordeaux Univ. (President of the hiring committee for an Assistant Professor position in Scientific computing), Bordeaux Univ. (Professor position), Dauphine (Assistant Professor position).
- Bérenice Grec
  - Hiring committee: Univ. Orléans (MCF position)
- Sébastien Martin
  - Hiring committee: École Nationale Supérieure des Arts et Métiers (mechanics).
- Marc Thiriet
  - Member of the selection comittee of HPC projects in the framework of HPC-Europa2 – Pan-European Research Infrastructure for High Performance Computing supported by the European Commission Capacities Area - Research Infrastructures Initiative
  - Member of the PhD committees of Referee of Bruno Tayllamin ((referee) University Montpellier 2); Edmund G. Lobb, (Aeronautics Dpt., Imperial College of London)
- Marina Vidrascu
  - Member of the PhD committees of Sofiene Hendili (University Montpellier)
  - Hiring committe: Univ Grenoble (MCF position)
- Irène Vignon-Clementel
  - Member of the PhD committees of: Yiyi Wei (University Lilles); Nick Jagiella (University Paris 6 UPMC)
  - Hiring committee for assistant professor positions at Grenoble University

8.3. Popularization

- Jean-Frédéric Gerbeau
  - Mediation and popularization of sciences: talk for "Fête de la science" Inria Paris-Rocquencourt
- Irène Vignon-Clementel
  - Journée "Filles et Mathématiques", High-school students, February 2nd & December 12th, 2012, Paris, France

SISYPHE Project-Team

8. Dissemination

8.1. Scientific Animation

P.A. Bliman:
- Scientist in charge of latin America at Department of International Affairs, Inria.
- Associate Editor of Systems & Control Letters.
- Chargé de mission in the Ministry of research.

F. Clément:
- Scientific head of the Large Scale Initiative Action REGATE (REgulation of the GonAdoTropE axis).
- Appointed member of the scientific board of the BCDE (Cell Biology, Development and Evolution) ITMO (Multi OrganizationThematic Institute) of the French National Alliance for Life and Health Sciences http://www.aviesan.fr/en.

Participations in examination boards:
- INRA Experienced Research Scientist open competitions for non-assigned positions (admissibility phase).
- INRA Research Director open competitions (admissibility and admission phases).
- Inria Research Director open competitions (admission).

M. Desroches:
- Section Chief Editor of the Media Gallery of the dynamical systems website http://www.dynamicalsystems.org (hosted by the Society for Applied and Industrial Mathematics (SIAM)).
- Co-organizer, together with Martin Krupa and Alexandre Vidal, of a special session titled “Multiple Time Scale Dynamics With a View Towards Biological Applications” at the 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications, 1-5 July 2012, Orlando, USA.

M. Mirrahimi:
- Associate Editor of Systems & Control Letters.
- Member of IFAC Technical Committee on Distributed Parameter Systems.
- Co-organizer together with Matt R. James, Australian National University, of two invited sessions on Quantum Control at the 48th IEEE Conference on Decision and Control.

M. Sorine:
- Member of IFAC Technical Committee on the Biological and Medical Systems (IFAC TC 8.2).
- Member of the Program Committee of FHIES 2012, the “Second International Symposium on Foundations of Health Information Engineering and Systems”.
- Member of the Program Committee of the 8th IFAC Symposium on Biological and Medical Systems, Budapest, Hungary / 29–31 August, 2012.
- Member of the scientific board of the ITMO Circulation, Metabolism and Nutrition (Multi Organization Thematic Institute of the French National Alliance for Life and Health Sciences).
- Member of the steering committee of the clinical study CGAO-REA.

Q. Zhang:
- Member of IFAC Technical Committee on Fault Detection, Supervision and Safety of Technical Processes.
- Member of IFAC Technical Committee on Modelling, Identification and Signal Processing.
- Member of the International Program Committee of the 16th IFAC Symposium on System Identification.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master: F. Clément, “Modelling and control of biological systems” course, 2,5 ECTS, part of the "Master’s Degree in BioInformatics and BioStatistics" (Paris-Sud 11 University, in collaboration with Béatrice Laroche) http://www.bibs.u-psud.fr/

Master : M. Desroches, “Introduction to ODEs and PDEs, 20 heures, M1, University of Bristol, UK.

Master: M. Desroches, mini-course on “Numerical simulation of ODEs and numerical bifurcations analysis”, 6 hours, Université Pierre et Marie Curie, Station Biologique de Roscoff, July 2012.

Master: M. Sorine, “The cardiovascular system and its short-term control - Modelling and signal analysis”, 3 ECTS. BioMedical Engineering - Master’s Degree Program, Paris-Descartes University and the Paris Institute of Technology (ParisTech) http://www.bme-paris.com/en/article/46.

8.2.2. Supervision

PhD : Najmeddine Attia, “Comportement asymptotique de marches aléatoires de branchement dans $\mathbb{R}^d$ et dimension de Hausdorff”, Paris 13 University, December, 20. Advisor: J. Barral.

PhD: Hadis Amini, “Stabilisation des systèmes quantiques à temps discrets et stabilité des filtres quantiques à temps continus”, Ecole Nationale Superieure Des Mines de Paris, September, 27. Advisors: M. Mirrahimi, P. Rouchon.

PhD: Zaki Leghtas, “Préparation et stabilisation de systèmes quantiques”, Ecole Nationale Superieure Des Mines de Paris, September, 27. Advisors: M. Mirrahimi, P. Rouchon.

PhD : Mohamad Safa, “Modélisation réduite de la pile à combustible en vue de la surveillance et du diagnostic par spectroscopie d’impédance”, Paris-Sud 11 University, October 24. Advisors: P.-A. Bliman, M. Sorine.

PhD : Peipei Shang, “Analyse mathématique et contrôle optimal de lois de conservation multi-échelles: application à des populations cellulaires structurées”, UPMC (Université Pierre et Marie Curie), July, 5. Advisors: F. Clément, J.-M. Coron.

8.2.3. Juries

P.-A. Bliman: member of the PhD committee of Samuel Martin, Grenoble University, Novembre 28.
M. Desroches: member of a PhD committee at the University of Sevilla (Spain) on the 19 December 2012.
M. Sorine: member of the following committees:
- PhD committee of Delphine Bresch-Pietri, Ecole Nationale Supérieure des Mines de Paris, December 17.
- HdR committee of Denis Efimov, Lille 1 University, November 28.
- PhD committee of Mohamad Safa, Paris-Sud 11 University, October 24.

VIRTUAL PLANTS Project-Team

7. Dissemination

7.1. Scientific Animation

- Christophe Godin has rendered the following services in 2012:
  - he is a member of the College de Direction of UMR AGAP
  - he is a member of the management board of IBC (Institut de Biologie Computationnelle de Montpellier)
  - he is a member of the scientific committee of the Environnement-Agromomy department at INRA
  - he is a member of the editorial board of the journal Frontiers in Plant Sciences
  - he is the scientific coordinator of action d'envergure Morphogenetics
  - he is the scientific coordinator of axis 4 on imaging and modeling (together with Patrick Lemaire)
  - he was a member of the expert committee for the selection of an assistant professor at Labri, University of Bordeaux.
  - he was a member of a Jury for the habilitation of high-school teachers in computer science (Jan 2012) in the context of the introduction of computer science as a new discipline at high school.
  - he participated to a commission of experts that wrote a report on the organization of research on complex systems for the University of Montpellier 2.
  - he participated to the PhD committee of Jonathan Legrand.
  - he is co-chair of the 7th international conference on functional-structural models of plants (FSPM 2013) that will be held in Finland in June 2013.
  - he gave 6 invited talks (4 abroad)
  - he was referee for papers submitted at journals: Development, Journal of mathematical biology, Journal of theoretical biology and at conferences: SIGGRAPH, SIGGRAPH Asia, Eurographics.
- Yann Guédon has rendered the following services in 2012:
  - he is a member of the editorial board of Annals of Botany and a member of the ERCIM working group "Computing & Statistics".
  - he was a member of a jury for recruiting research engineers at INRA.
  - he was a referee for papers submitted to Forest Ecology and Management and Journal of Statistical Planning and Inference.
- Frédéric Boudon was referee for papers submitted to SIGGRAPH, SIGGRAPH Asia, IEEE Transaction On Visualisation and Computer Graphics and Computers and Electronics in Agriculture.
- Etienne Farcot served as a referee for papers submitted to Physica D, Chaos, Plant Physiology, Mathematical Modeling of Natural Phenomena, Nonlinear Analysis Series B: Real World Applications, Journal of Mathematical Biology, PLoS One.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Master Biostatistics. Jointly with Montpellier 1, Montpellier 2 Universities and Agro-Montpellier.
Yann Guédon teaches the stochastic modeling course (http://www.agro-montpellier.fr/um2/um1/masterbiostatistique). This involves 21h of M2 classes.

Christophe Godin was responsible for a class of Master 2 on 'Plant modeling' with participation of Yann Guédon, Christophe Pradal, Frédéric Boudon and Christian Fournier in Montpellier SupAgro (M2 - 25h).

Christophe Godin gave a class of Master 2 on 'Tree comparison algorithm' in the Master of Bioinformatique (M2 - 4h).

Christophe Godin gave a class of Master 2 on 'Plant Modeling' in the module plant and animal Morphogenesis of the Master in biology at ENS-Paris (M2 - 4h).

Etienne Farcot, Christophe Godin and Yann Guédon participated to the module iPlant in the Master of bioinformatic and biomathematics (University Cheikh Anta Diop, Dakar, Sénégal) (M2 - 12h).

Yann Guédon gave a 8h lecture about plant architecture analysis at the state University of Londrina (Parana, Brazil)

Christophe Pradal and Christian Fournier taught the Master class "Impact de l'architecture sur la propagation des maladies foliaires" in the module 'Démarches de modélisation' in Montpellier SupAgro (15h).

Master Computer Science. University Montpellier 2.
Frederic Boudon, Christophe Godin and Christophe Fiorio from LIRMM teach a course of 30h on plant modeling and computational geometry.

Christophe Godin and Frédéric Boudon gave a 2 days training session on L-Py and plant modeling for a group of students in Ecole Préparatoire aux Erandes Ecoles.

7.2.2. Supervision

PhD : Preuksakarn Chakkrit, Reconstructing Plant Architecture from 3D Laser Scanner Data, Université de Montpellier 2, 19 december 2012, F. Boudon and C. Godin.

PhD in progress : Anaëlle Dambreville, *"Determinants and modeling of mango phenology: interactions between structural and temporal components in a branching structure and temperature effect"*, Montpellier 2 University, F. Normand, P.E. Lauri, Y. Guedon.

PhD in progress : Jonathan Legrand, *"Hormon signaling and control of morphogenesis during flower development"*, ENS Lyon, P. Das, Y. Guedon.

PhD in progress : Pierre Fernique, *"Hidden transition models for the phenotyping of plant architecture in relation to environmental and genetic factors"*, Montpellier 2 University. Y. Guédon, J.-B. Durand.

PhD in progress : Jean Peyhardi, *"Markov and semi-Markov switching generalized linear mixed models applied to the analysis of plant architecture in relation to environmental and genetic factors"*, Montpellier 2 University. C. Trottier, Y. Guédon.

PhD in progress : Maryline Lièvre, *"Analysis and multiscale modeling of foliar growh in Arabidopsis thaliana in response to environmental stresses. Implication of the floral transition in the foliar expansion"*, Montpellier 2 University, C. Granier, Y. Guédon.

PhD in progress : Mathilde Balduzzi, *"Geometric modeling of plant canopy from 3D scanner images: Combined use of 3D information and reflected intensity for meshing"*, Montpellier 2 University, C. Godin, F. Tardieu.

PhD in progress : Léo Guignard, *"Segmentation, visualization and mechanical modeling of embryonic development in the ascidian"*, Montpellier 2 University, C. Godin, P. Lemaire.

PhD in progress : Guillaume Garin, *"Développement d'un cadre générique de modélisation du couple plante – agent pathogène dans OpenAlea et d'une méthodologie de transfert vers un Outil d'Aide à la Décision"*, Montpellier 2 University, B. Andrieu, C. Pradal, C. Fournier.

PhD in progress : Jean-Philippe Bernard, *"Adaptive mechanical model of early flower development based on 4D imaging"*, Montpellier 2 University, C. Godin, B. Gilles.

7.2.3. Juries

Christophe Godin participated was a referee of the theses of Romain Barillot and Wojtek Palubicki and participated to the defenses of these theses. Christophe Godin and Frédéric Boudon, co-supervising Chakkrit Preuksakarn thesis, were also part of the jury of his defense.

7.3. Popularization

Christophe Godin gave 2 conferences for high-school pupils respectively on plants and fractals and on meristem modeling in the context of MathC2+ and fête de la science (6h).